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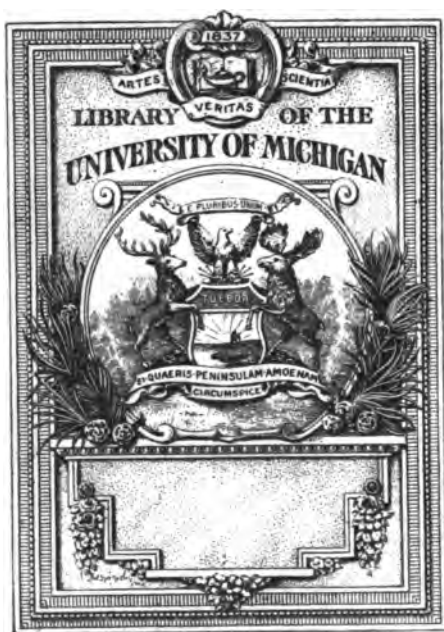
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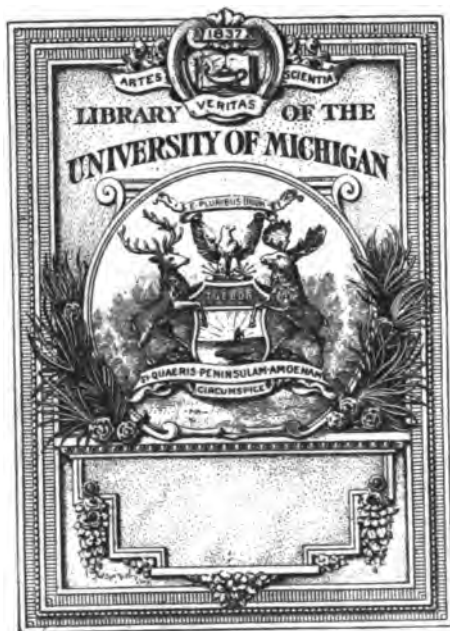
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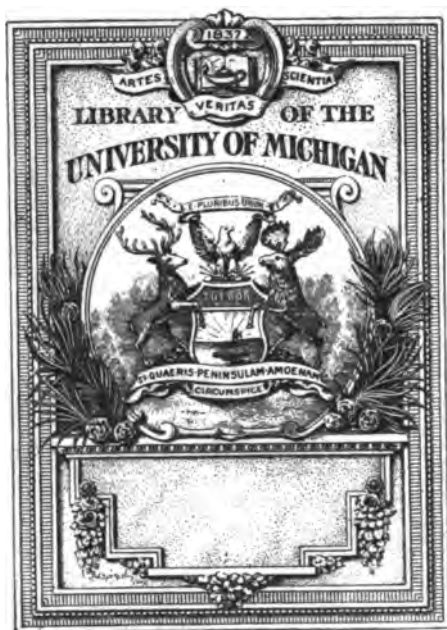
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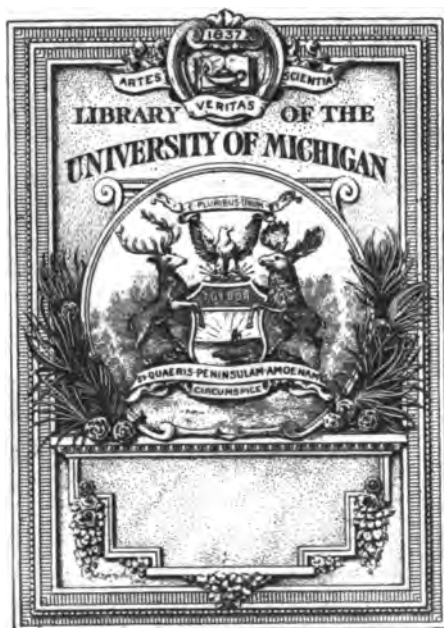
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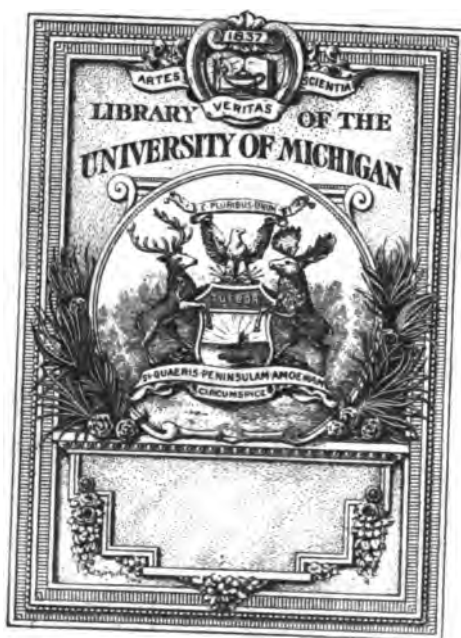
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THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

1912

EDITED BY

FRANCIS G. WICKWARE, B.A., B.Sc.

UNDER DIRECTION OF A SUPERVISORY BOARD
REPRESENTING NATIONAL LEARNED SOCIETIES



NEW YORK AND LONDON
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1913

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PREFACE

With the publication of this volume, covering the events and progress of 1912, the AMERICAN YEAR BOOK reaches its third issue. In general, the YEAR BOOK for 1912 follows the lines of the issue for 1911, but the subdivision of topics has been carefully revised as experience has demonstrated the possibility of improvement for the convenience of the user. New titles have been added to the list of permanent topics, and a few topics have been combined in a new arrangement. The most important change has been the distribution among the departments to which they logically belong of the international and national statistics grouped in the first two departments of previous issues. The scope of the work remains as defined in the preface to the first issue:

"The AMERICAN YEAR BOOK is intended for the needs of writers and searchers of every kind. Because of its inclusion of scientific subjects, it has been necessary to limit the political and statistical material which is the staple of many annual handbooks; the book does not aim to treat everything that could be useful, but throughout to select from the enormous mass of details those things which, in the judgment of experts in each field, are most significant, most permanent in value, most likely to answer the searchers' questions."

"The AMERICAN YEAR BOOK does not aim to be a rival of other annual publications, either foreign or domestic. Details as to elections, the *personnel* of state and municipal governments, political personalities, societies, and educational, literary, and scientific institutions have deliberately been reduced, in order to make room for material of a kind not found in most of the annuals. The AMERICAN YEAR BOOK appeals first of all to students in all fields, who wish a record of progress, not only in their own, but in other departments of human endeavor. It is intended, also, as a handbook for busy men, editors, contributors, professional men, teachers, scientific workers, engineers, practical and business men, who wish to verify or confirm points that arise in their minds; and to serve as a handy body of reference material settling questions of fact. Throughout the work the object has been to make the volume convenient for the user; hence the YEAR BOOK is arranged on a plan entirely unique in publications of this general character. It is intended to make reference easier by subdividing material into departments, by putting cognate subjects into close association, and by liberal cross references, making it easy to turn at once to the discussions relating to any subject. A full and carefully analyzed index is also provided in order to open up all remote connections and relations of a topic. This arrangement by groups of affiliated subjects, instead of haphazard or alphabetical succession of topics, is more convenient, and at the same time more scientific."

The Supervisory Board of representatives of national learned and scientific societies, officially known as the American Year Book Corporation, have continued actively to assist in the preparation of the YEAR BOOK. The members of this Board, who originally projected the work, remain individually responsible for the scope and content of the reviews of their respective fields; several are themselves contributors; many have coöperated with the Editor in securing contributors; and all have assisted the Editor with criticism and counsel. The Supervisory Board has now forty members, a complete list of whom will be found on a subsequent page, representing forty-three societies. Three changes in *personnel* have occurred during the year: Mr. John W. Alexander has succeeded Mr. Francis D. Millet, who perished in the *Titanic* disaster, as represen-

PREFACE

tative of the American Federation of Arts; Prof. John Bassett Moore now represents the American Society of International Law, succeeding Dr. James Brown Scott; and Prof. Henry N. Russel, the Astronomical and Astrophysical Society of America, succeeding Prof. Edward C. Pickering.

One hundred and twenty-four contributors have coöperated in the preparation of this issue. All are experts in their special fields, and the complete list printed on a subsequent page contains many names of eminence.

To Americans the most important part of the year's record is, of course, that dealing with the Presidential campaign and election, which is reviewed in full detail. Internationally the year's record is of unusual interest, and the external relations of the United States, marked by events of prime importance, are comprehensively reviewed. The statistical record of the year is incomplete in some respects, on account of unusual delay in the publication of certain Government reports; on the other hand, certain departments present data which bring the record down to a much later date than has been attempted in previous issues. American events and progress in politics, economics, sociology, the sciences, the arts, and the humanities are surveyed with fullness and authority, and are placed in their proper perspective by a background of the significant events in foreign countries.

The acknowledgments of the YEAR BOOK are due, not only to the contributors and members of the Supervisory Board, but also to the many public officials, federal, state, and municipal, who have courteously responded to requests for statistical data, and to the readers who have offered disinterested criticism of previous issues. The Editor welcomes criticism and suggestions from any source on the selection of material and method of treatment, or on the more formal side of typography, make-up, and conveniences for users.

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THE AMERICAN YEAR BOOK is arranged in thirty-five departments, in which are grouped articles on related subjects. In the following Table of Contents only the main topics in each department are listed; a complete Index will be found at the end of the volume. SMALL CAPS indicate titles of separate articles.

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A RECORD OF EVENTS AND PROGRESS

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JAMES ALBERT WOODBURN

POLITICS, PARTIES, AND THE PRESIDENTIAL CAMPAIGN

The most prominent aspects of American history during 1912 have been the personal and political contests over the Presidency. The presidential candidates, conventions, campaigns, and the election have held the center of the stage and have all but absorbed public attention. The year has been one of the most notable in the annals of American politics. It has witnessed a widening and fatal schism within the ranks of the Republican party, a strenuous and bitter conflict within the Democratic party, and the creation of a new party under eminent and powerful leadership and with a widespread popular following. The student of American politics must needs go back for more than 50 years (1854-1860) to find a precedent for the party conditions of 1912, if, indeed, a precedent is to be found at all. The political record of the year, its platforms, issues, conventions and public discussions, will prove to be to the future student of American history of serious moment and of exceptional value. We here attempt to give a connected and summary account of the complicated political contest and its outcome.

THE REPUBLICAN PRE-CONVENTION CAMPAIGN

The Call for the Republican National Convention.—The opening of the year witnessed the preparations by the two large political parties for the pending contest of the Presidential year. The official call for the Republican National Convention, as the *AMERICAN YEAR BOOK* for 1911 indicates (p. 72), was issued by the Republican National Committee in session in Washington, Dec. 12, 1911, signed by John F. Hill, chairman, and William Hayward, secretary. The call directed that the National Convention be held in Chicago June 18, 1912. It set forth that the Convention should consist of four delegates-at-large from each state, and two delegates-at-large for each representative-at-large in Congress, two delegates from each congressional district, six delegates from each of the territories, and two delegates each from the District of Columbia, Alaska, Porto Rico, and the Philippine Islands, and for each delegate an alternate delegate was to be elected. This provided for a convention of 1,076 delegates and as many alternates. It was stipulated that the congressional district delegates should be elected by district conventions called by the Republican congressional committee for each district, and in the absence of a congressional district committee the Republican state committee should act as a substitute in issuing the call and providing for the district convention. The committee ruled that "the dele-

gates and alternates, both from the states at large and from each congressional district should be elected in conformity with the laws of the state in which the election occurs, if the state committee or any such congressional committee so direct." By this conclusion, only in those states whose laws require a preferential primary or the primary method of electing the delegates, could the party voters use such a process of sending delegates to the National Convention. It was provided that all delegates should be elected not earlier than 30 days after the date of the call (Dec. 11, 1911) nor later than 30 days before the meeting of the National Convention, and that all notices of contests should be submitted in writing with a printed statement setting forth the ground of the contest, and these papers should be filed with the secretary of the committee 20 days prior to the meeting of the National Committee.

The Contest Within the Republican Party.—Even before the Convention had been called, systematic work had begun within the party by its contending and antagonistic wings, and by the candidates and their friends for the control of the majority of the delegates.

Progressive Republicans in Ohio.—On Jan. 1, 1912, the Ohio Progressive Republican League was formed, under the leadership of Gifford Pinchot, James R. Garfield and others. By a vote of 52 to 32 the League voted against endorsing any candidate for President, but by a vote of 81 to 11 it went upon record as opposed to the renomination of President Taft, and declared that it was the purpose of the League to work harmoniously for a Progressive Republican for President. It favored a tariff for protection to the extent of differences in wages at home and abroad, popular election of United States Senators, a graduated income tax, direct primaries, initiative and referendum, the short ballot, and presidential preference primary laws.

Progressive Republicans in Illinois.—Early in January, also, a small conference of Progressive Republicans

was held in Springfield, Ill., presided over by Fred S. Wilbur, for the purpose, apparently, of backing Senator Robert M. La Follette's candidacy and to seek control of the party within the state. On Jan. 10, a committee of the conference issued a call for the coöperation of "all who believe in the constructive principles of Progressive Republicanism, whether they be supporters of Robert M. La Follette or Theodore Roosevelt for the Presidential nomination." The call declared that Mr. Taft's administration had failed to carry out the pledges of the Republican party or to respond to "the deep and settled purpose of the American people to restore popular control of political parties and of government." On Jan. 27 the conference thus called met in Springfield, with Charles F. Merriam and E. P. Lovejoy as temporary and permanent chairmen, respectively. Medill McCormick was chairman of the resolutions committee and Walter S. Rogers of the committee on organization. The resolutions named no candidates, but denounced ex-Speaker Cannon, Governor Deneen and Senator Lorimer, and announced a declaration of principles. These opposed stock watering and monopoly control of markets, and favored presidential preference primaries; the direct popular election of United States Senators; the extension of popular control over the agents and acts of government by means of the initiative, referendum and recall; a revision of the taxing system of the state; an industrial commission to investigate labor conditions with special reference to unemployment and industrial diseases; the minimum wage for women and children; legislation for the proper supervision and regulation of all public utilities within the state; the short ballot; a thorough corrupt-practices act; a non-partisan judiciary; conservation of natural resources; honest enforcement of civil-service laws, and the abolition of minority representation in the state.

Senator Robert M. La Follette.—During the holiday recess of Congress, in the last week of 1911, Senator La Follette of Wisconsin, standing in the van of the Progressive

Republicans and as an avowed candidate for the Presidency, made a speaking tour of the Middle West. He spoke in several of the principal cities of the Middle West, Cleveland, Toledo, Dayton, Cincinnati, and in Michigan and Illinois. He affirmed that the progressive movement was a fight as "old as human liberty, for the rights of all the people against the encroachments of a powerful few." These few, representing the great trusts and combinations of wealth, had become a tremendous power, strong enough to nominate the candidates of both parties for the Presidency, to stifle competition in business, to curtail or withhold credit in finance, to monopolize natural resources, and to impose prices and burdens upon the consuming public at will. The purpose of the progressive movement, according to Senator La Follette, was so to modify constitutions, statutes, courts and the complex details of government as to restore the sovereignty of the people and carry out their will.

Senator La Follette declared himself in favor of congressional legislation to prevent unreasonable restraints of trade, based on physical valuation of corporate properties and the cost of production. As to the tariff, he would repeal all duties that foster unfair competition, but he approved the general Republican principle of protective duties based upon the difference in the cost of production in this and competing countries, and this he would ascertain by a permanent, non-partisan, scientific tariff commission. Senator La Follette opposed the Aldrich currency scheme, while he favored the direct primary for selection of delegates to Presidential conventions, together with a Presidential preference primary, the popular vote to be binding upon the action of the delegates. He stood for the initiative and referendum and the recall, including the recall of judges.

The Progressives Abandon La Follette.—The candidacy of Senator La Follette and the activity in several important states of the Progressive Republican League indicated that there would be vigorous contest within the Republican party against Mr.

Taft's renomination for the Presidency. But a division soon arose among these progressives as to the candidacy that would be most effective in securing the defeat of the President. Mr. La Follette had first been encouraged to announce his candidacy, but now some who had encouraged him sought to induce him to withdraw in favor of Mr. Roosevelt as a popular leader more likely to defeat Mr. Taft within his party. This became the subject of dissension and recrimination between Mr. La Follette and other progressives and became the ground of an implacable opposition on the part of Mr. La Follette toward Mr. Roosevelt and his subsequent candidacy.

The La Follette-Roosevelt Feud.—Senator La Follette relates that Roosevelt, in 1911, had shown reluctance and half-heartedness in coming to the support of the progressive movement within the Republican party; that he had declined to join the Progressive Republican League; that he had not been willing to put himself in open opposition to the Taft administration or to announce his own adherence to the progressive cause; that when at last he became hostile to Taft he was not in favor of opposing his renomination by bringing out a progressive candidate, being confident that Taft could not be beaten for renomination and that it would be better to permit his renomination to go by default and allow him to be beaten at the polls. Roosevelt's counsel had not been accepted by the more devoted progressive leaders, and Gifford Pinchot and others insisted that a fight should be made against Taft's nomination, that it could not be made without a progressive candidate, and that the future of the progressive movement demanded that such a contest be waged; and Senator La Follette says that Pinchot was anxious, in case Taft should be renominated, that a third party fight should be put up against his reelection. La Follette further alleges that a change of mind was later reported in Roosevelt; that he (La Follette) was encouraged by Roosevelt to announce his candidacy against Taft. La Follette asserts that he was again and again assured

by Pinchot, Gardner and others that under no circumstances would Roosevelt be a candidate against Taft.

Under these circumstances and with this understanding, according to La Follette's testimony, the La Follette candidacy had been entered upon, and Mr. La Follette felt that he had suffered grievously and unjustly in being abandoned by his progressive supporters. He charged that Roosevelt had deliberately used him as a stalking horse to "try out" the situation with the intention of himself entering the race at the opportune time. On the other hand, Gifford Pinchot asserts that he and his brother, Amos Pinchot, and other progressive supporters, by furnishing the "sinews of war," had stuck to La Follette loyally as long as there was the slightest hope of his leading the progressive campaign; that the progressives had started in to back La Follette and had kept on backing him until La Follette's manager, Walter L. Houser, had sent a message that they were released on account of La Follette's physical inability to keep up the fight.

There were among the progressives many who opposed this change of policy. The executive committee of the Minnesota Progressive Republican League opposed these attempts to set La Follette aside and pledged to him continued support. At the annual dinner of the Periodical Publishers' Association in Philadelphia, Feb. 2, Mr. La Follette spoke for two hours, between 12 and 2 at midnight, in such tone and temper and with such lack of his usual force and perspicuity as indicated that the strain and overwork of the campaign had broken him down physically. The report was given out, in part, perhaps, by those who wished to press La Follette aside and bring forward the candidacy of Mr. Roosevelt, that on account of his broken health Senator La Follette had withdrawn from the Presidential race. In answer to inquiries and pledges of continued support, Senator La Follette replied that he had not withdrawn, that the stories concerning his health had been greatly exaggerated and that he would "remain a candidate steadfast to the end." The great body of the

Progressive Republicans turned to ex-President Roosevelt, believing that he, if he could be induced to stand as a candidate, would afford the progressives the only hope of success.

Seven Governors Urge Roosevelt's Candidacy.—Accordingly, on Feb. 10, seven Republican governors and 70 other Republican leaders representing 24 states met in conference in Chicago to promote the nomination of Roosevelt. The governors were Stubbs of Kansas, Osborn of Michigan, Hadley of Missouri, Aldrich of Nebraska, Bass of New Hampshire, Glasscock of West Virginia, and Carey of Wyoming. This conference issued an address to the public reciting the momentous questions that were pressing for solution relating to the rights of men and the control of capital. Although Roosevelt was not a candidate, the seven governors united in a statement expressing the belief that the people had decided to make him their candidate. They urged all who "desire prosperity and progress to join in the demand for his nomination," and they expressed the conviction that Roosevelt would accept the nomination as a duty he owed to his country. The seven governors also addressed a letter to Mr. Roosevelt declaring the belief that "a large majority of the Republican voters of the country favor your nomination and a large majority of the people favor your election as the next President of the United States." They urged Mr. Roosevelt to declare whether, if the nomination was offered to him unsolicited and unsought, he would accept it.

Roosevelt Becomes a Candidate.—Mr. Roosevelt replied (Feb. 24) that the matter was one to be decided without "reference to the personal preferences or interests of any man, but purely from the standpoint of the people as a whole." He promised to accept the nomination for President if it were tendered to him and said: "I will adhere to this decision until the Convention has expressed its preference." He expressed the hope that as far as possible the people might be given a chance, through direct primaries, to express their preference as to who

should be the nominee of the Republican National Convention.

Roosevelt's Columbus Speech.—On Feb. 21 Mr. Roosevelt delivered a notable address before the Ohio Constitutional Convention in Columbus. It was entitled "A Charter of Democracy" and it became the chief subject of discussion in the political press of the country. Proclaiming himself a progressive and declaring himself for the several tenets of that creed, Mr. Roosevelt boldly announced his belief in pure democracy and urged support of all governmental devices which will make the representatives of the people more easily and certainly responsible to the people's will. In the articles of the progressive creed to which he announced his adherence, he included (while expressing high respect for the judiciary) the "recall of judicial decisions," which he explained to mean that "when a court decides a constitutional question, when it decides what the people as a whole can or can not do, the people should have a right to recall that decision if they think it wrong." He held the judge to be as much the servant of the people as any other official, and he asserted that "by the abuse of the power to declare laws unconstitutional the courts have become a law-making instead of a law-enforcing agency." Mr. Roosevelt asserted that he would especially apply this practice of the recall within the states, and if the Supreme Court of a state declared a given statute unconstitutional because in conflict with the state or the national constitution, its opinion should be subject to revision by the people themselves. (See also 11, *The Recall*.)

Mr. Roosevelt spoke for the initiative and the referendum, in favor of the short ballot, popular election of senators, direct nominations, presidential preference primaries, and for popular election of delegates to national nominating conventions. He closed his Columbus speech with an earnest plea for social justice, for the moralization not only of political conditions, but of industrial conditions, that "every force in the community, individual and collective, may be directed toward securing for

the average man and average woman a higher and better and fuller life in the things of the body no less than in those of the soul."

This speech was looked upon as a political platform of Mr. Roosevelt's policies and principles on which might be based his candidacy for the Presidency. It was delivered three days before Roosevelt answered the seven governors consenting to become a candidate. Following the announcement of his candidacy, Mr. Roosevelt supplemented his Columbus speech with one at Boston on March 26, before the Massachusetts legislature. He here repeated his advocacy of the progressive tenets.

The Taft-Roosevelt Contest.—With the announcement of Mr. Roosevelt's candidacy an active and by no means friendly campaign for the Presidential nomination was begun. On Lincoln's Birthday (Feb. 12) President Taft had spoken in New York City, attacking on the one hand the Progressive Republicans, and on the other the Democratic leadership in the House. The progressives, in the judgment of the President, were "seeking to pull down those things which have been regarded as the pillars of the temple of freedom and Republican government, and to reconstruct our whole society on some new principle not definitely formulated, and with no intelligent or intelligible forecast of the exact constitutional and statutory results to be attained." He objected to direct action of the people in the selection of candidates because they were "indifferently informed," and he referred to the advocates of direct popular government as "extremists who would hurry us into a condition which would find no parallel except in the French Revolution. Such extremists," he said, "are not progressives; they are political emotion-alists or neurotics."

Mr. Taft's campaign was placed in charge of Wm. B. McKinley, a congressman from Illinois, the chairman of the Republican congressional campaign committee.

Early in March announcement was made that nine Republican governors had endorsed President Taft for re-nomination. These governors were

Eberhart of Minnesota, Carroll of Iowa, Hay of Washington, Goldsborough of Maryland, Tener of Pennsylvania, Hooper of Tennessee, Spray of Utah, Pennewill of Delaware, and Pothier of Rhode Island. Late in March, President Taft addressed the Massachusetts legislature. He approved the new Massachusetts primary act, but denounced unregulated "soap-box" primaries. He claimed that the people "do really rule," and he defended again judicial independence as the keystone of our governmental arch. Two days later Mr. Roosevelt delivered a speech in Carnegie Hall, New York, in which he criticized President Taft's position as favoring "a government of the people, for the people, by a representative part of the people," and this he called "an excellent description of an oligarchy."

In the following week Mr. Roosevelt, at Portland, Me., and at Chicago, discussed the problems of "big business," advocating the control and regulation of trusts, rather than their dissolution by law suits, urging that Government should "control business and not strangle it."

President Taft's participation in the campaign was at first limited to two public speeches, to which reference has been made, but when Roosevelt began active campaigning on the stump, attacking the policies of the administration, accusing Taft of being a reactionary and of being in league with bosses and the beneficiary of their crooked politics, President Taft in self defense felt compelled to enter personally into the campaign. Early in March the President left Washington for a speaking campaign in the West. On March 8 he spoke in northern and eastern Ohio, and in a speech in Toledo he discussed and vigorously opposed Roosevelt's policy of the "recall of judicial decisions." He denounced the proposal as contrary to anything in government heretofore proposed, and he asserted that it would lead to "a suspension of the constitution to enable a temporary majority to enforce a popular, but invalid act," and to "the suspension of constitutional guarantees according to popular whim.

Such a proposal," said Mr. Taft, "is utterly without merit or utility, and, instead of being progressive, is reactionary; instead of being in the interest of all the people and of the stability of popular government, is sowing the seeds of confusion and tyranny." On March 9, Mr. Taft spoke in Chicago on the same lines.

The Presidential Primaries and Conventions.—Meanwhile, the popular demand for the application of the presidential preference primary continued to increase. The men who were in charge of the Republican party organization and machinery were largely in favor of Taft's renomination. Those who wished to secure delegates for Mr. Roosevelt felt themselves severely handicapped if the contest were to be determined by the old methods which were largely under the control and manipulation of machine politicians. The progressives, therefore, urged that, wherever possible, the choice of delegates should be made by popular primaries. Upon the urgent pleas and representations of the Progressive Republicans of Illinois, Governor Deneen of that state called an extra session of the legislature March 26, for the purpose of providing for a preferential primary vote. A bill amending the direct primary law of Illinois was hurriedly passed and was signed by the governor on March 30. This provided for an advisory vote on the Presidential nominees, the vote in the state at large to be considered as advisory to, though not legally binding on, the national delegates and alternates-at-large, and the vote in each congressional district as advisory to the district delegates and alternates. Some states had already made such provision for the popular choice and others followed in order, so that in the course of the pre-convention campaign 12 states provided by law for a presidential preference primary, namely, Oregon, California, Nebraska, North Dakota, South Dakota, Ohio, New Jersey, Wisconsin, Massachusetts, Maryland, Pennsylvania and Illinois. (See also II, *Presidential Preference Primary*.)

The Indiana, New York, and Colorado Conventions.—On March 26, a

Republican state convention was held in Indiana which elected four delegates-at-large instructed for Taft. A bolting convention was at once organized and a contesting delegation from Indiana was named with instructions for Roosevelt. This was done on the plea that the Indianapolis primaries under the control of the Taft managers had been unfair, disorderly and lawless, and that the state convention had seated the Taft delegation from that and other counties contrary to justice and equity; and that fraudulently elected delegates had been allowed to sit in judgment upon their own credentials. The New York primaries, held on the same day as the Indiana convention, were also controlled by the Taft forces and the great majority of the delegates, all but seven, were named for Taft. On March 27 the Taft forces controlled also the Colorado convention and the delegates to the National Convention from that state were all instructed for Taft.

The North Dakota Primary.—The first preferential primary was held in North Dakota on March 19. This was the first state-wide presidential preference primary in the history of the United States. The names of La Follette, Roosevelt and Taft had been reported on Feb. 18 for the places upon the official ballot. The voters were given an opportunity to declare their choice. Senator La Follette was given a majority over both the other candidates. On the 22nd the Associated Press reported returns as follows: La Follette, 28,620; Roosevelt, 19,101; Taft, 1,543. There was no contest in North Dakota within the Democratic party, there being but one Democratic name on the ballot, that of Governor Burke, and it was charged by the Roosevelt supporters that many Democrats voted for La Follette in the Republican primary.

The Illinois Primary.—In Illinois, on April 12, the Republican voters of the state in their primaries gave Roosevelt a majority of 138,410 over President Taft, while Senator La Follette received 37,139 votes. Fifty-six out of the 58 delegates of the state were allotted to Mr. Roosevelt by the popular decree. Only one dis-

trict in the state, the one in Chicago controlled by Mr. Lorimer and his friends, voted for Mr. Taft. In spite of this overwhelming preference of the voters, an attempt was subsequently made by the party machine (almost everywhere opposed to Roosevelt) to secure delegates who were personally favorable to Taft. Delegates were placed in the Illinois delegation who were not loyally in favor of Roosevelt's nomination and who could be relied on by the Taft forces for opposition to Roosevelt in the emergencies of the convention. This could be done because the national delegates were actually appointed by the state and district conventions, and the delegates to these were appointed by local conventions. The Republican voters registered their will at the polls, but the convention system still in vogue retained to the party machine a large measure of power.

The Pennsylvania Primary.—In Pennsylvania, on April 13, Mr. Roosevelt and the progressives received another overwhelming popular endorsement. Of the 76 delegates of the state Roosevelt carried 67, including the 12 delegates-at-large. There was no opportunity for preferential voting on the Presidential candidates themselves, but the result in the choice of delegates indicated that a great majority of the party voters of Pennsylvania preferred Mr. Roosevelt.

Primaries in Other States.—Official returns from the Wisconsin primaries on April 13 gave Mr. La Follette 131,920 and Taft 47,629. Mr. Roosevelt's name did not appear on the primary ballot in that state. On April 19 primary contests were held in Nebraska and Oregon. In both states the vote was strongly in favor of Roosevelt. In New Hampshire on April 29 President Taft won the eight delegates from the state, the first primary contest in which the President had not been defeated.

The Michigan Convention.—In Michigan the legislature refused, in spite of Governor Osborne's strenuous efforts, to pass an act for a preferential primary law. The House complied but the state Senate refused to comply, and as a two-thirds ma-

jority was required and the primary advocates lacked three votes of mustering this majority in the Senate, the progressive efforts for a primary failed in Michigan. The result of the legislature's failure to act was a violent contest for the control of the Republican state convention. This convention at Bay City, April 11, became a riotous proceeding between Taft and Roosevelt delegates. The sergeants-at-arms of the convention were unable to keep the peace and the city police and state militia were called in to preserve order. The result was that two conventions were held, one naming Taft delegates and one naming Roosevelt delegates to the national convention.

The New York Convention.—The New York Republican Convention on April 15 cordially endorsed President Taft's administration and the state's delegates-at-large were advised, though not instructed, to vote in the National Convention for his renomination. The delegates from the New York districts as well as from the state-at-large were almost unanimously in favor of Mr. Taft and the New York state convention denounced the progressive demands for the initiative, referendum and recall as "subversive to our form of government." The party platform adopted in this state convention at Rochester Mr. Roosevelt denounced as a most reactionary document, on which it would be impossible for the party to carry a single state in the Union.

Conventions in Other States.—In Maine an entire delegation of 13 delegates were elected favorable to Roosevelt. In Vermont the four districts were evenly divided while the delegates-at-large were favorable to Mr. Taft. In Kentucky 23 delegates were secured for Mr. Taft and three for Mr. Roosevelt. In Connecticut the delegates chosen were strongly for Mr. Taft. In all these state contests the choice was made by the convention system.

The Massachusetts Primary.—The primary contest in Massachusetts assumed unusual interest, as it was marred by heated personalities and marked the climax of the alienation between Roosevelt and Taft, who had

formerly been close political and personal friends. On April 24 President Taft spoke in Boston in his own defense against what he considered unjust charges by Mr. Roosevelt. He summed up these charges—that he had been accused of favoring an aristocracy of political bosses and that he sought alliance with bosses to secure his renomination; that he was shamelessly using the patronage of Government to this end; that he was a guilty beneficiary of fraud and violence in party primaries and conventions designed to defeat the will of the people in the struggle for delegates; that he had betrayed the progressives who had put him into power and become a reactionary; and that he was a friend of the "interests" and an upholder of special privilege. As head of the Government and titular head of his party whose administration was thus attacked, President Taft felt that he was in duty bound to reply to these charges. Mr. Taft, in turn, charged that Mr. Roosevelt had garbled his speeches, had not given him a "square deal," and had disregarded his own promise not to accept another nomination. He affirmed that he was not relying on bosses any more than Roosevelt was; that he had not sustained or condoned Lorimer and "jack-pot politics" in Illinois, and he adduced as evidence a former letter he had written to Roosevelt in which Taft spoke of his interest in the unseating of Lorimer, and his fear that, his attitude having "leaked out," the feeling of clubdom in the Senate would arouse resentment (see "*Senator Lorimer*," *infra*). As to the bosses Taft affirmed that he was only accepting the same kind of support from them and the party machines that Mr. Roosevelt had accepted in the past. Mr. Taft said further that he had followed Mr. Roosevelt's advice in reference to various policies and now Mr. Roosevelt was unfairly withdrawing support from him.

The day before this speech was delivered Mr. Taft transmitted to the Senate, in response to a resolution calling for executive documents regarding the Harvester Trust, a long letter of Aug. 22, 1907, from President Roosevelt to his attorney-general

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(Mr. Bonaparte). In view of Mr. Roosevelt's campaign the President considered it "compatible with the public interest" to transmit these papers, though he had refused to do so when previously called upon, and, therefore, Mr. Roosevelt and his friends charged the President with "playing politics" by violating confidential correspondence. The letter explained that George W. Perkins, the partner of J. Pierpont Morgan, had conferred with President Roosevelt about the Harvester Trust and Mr. Roosevelt instructed his attorney-general to look into the matter as presented by Mr. Perkins. The letter closed with these words: "Please do not file the suit until I hear from you." No suit was filed against the Harvester Trust by the Roosevelt administration, and this fact and the letter were adduced as evidence of Mr. Roosevelt's friendliness to the trusts.

On April 26 Roosevelt replied at Worcester, Mass., defending his course in attacking the administration and substantially accusing President Taft of intentional misrepresentation. He renewed the charge that the President had for his supporters political bosses who were responsible for "the alliance between crooked politics and crooked business." Mr. Roosevelt unbraided Mr. Taft for voicing no opposition to Lorimer as long as it was possible for Lorimer to give him aid in the Illinois primaries. Roosevelt defended his own course on Canadian reciprocity and the trusts, and as to the nomination of 1908, he affirmed that he had against great pressure kept the promise which he had made, since he had refused a renomination that he might very easily have had. Roosevelt affirmed further that Taft had become President merely because he (Roosevelt) had kept this promise and he reminded the President that "it is a bad trait to bite the hand that feeds you."

The preferential voting in Massachusetts occurred on April 30. The result was close and inconclusive. The new law provided both for the popular election of delegates and an expression of preference for the Presidential nominee. Candidates for

delegates to the National Convention were permitted to announce themselves on the ballots as pledged to one or another of the candidates. In the congressional districts ten delegates were elected pledged to Mr. Roosevelt and 18 pledged to Mr. Taft, though in two of the Taft districts the preference vote was in favor of Mr. Roosevelt. The preferential vote of the state was cast for President Taft by a plurality of about 5,000, while the eight delegates-at-large pledged to Mr. Roosevelt were elected by a plurality of about 8,000. On the following day, as soon as the state vote was known, Mr. Roosevelt issued a public statement to the effect that he should expect the delegates-at-large, although they were personally pledged in favor of his nomination, to give their support to Mr. Taft in harmony with the majority verdict of the state.

The California Primary.—In the California primaries, May 14, Roosevelt won over Taft by a vote of 122,702 to 62,392, Mr. La Follette, the other progressive, receiving 40,825 of the Republican votes of that state. So far President Taft had suffered a series of defeats in the party voting.

The Ohio Primary.—When the Ohio primaries came on it was publicly intimated that if President Taft did not carry the Republican primaries in Ohio, his own state, he would withdraw his candidacy and throw his support to Justice Hughes of the U. S. Supreme Court, formerly governor of New York. It turned out in Ohio that the verdict in the primaries (May 21) was a decisive defeat at the polls for President Taft. On the popular vote 42 of the district delegates were secured for Roosevelt and ten for Taft. Six delegates-at-large were to be chosen by the state convention on June 3-4. The supporters of President Taft got a majority of the delegates to the state convention. This convention meeting in Columbus in June awarded the six delegates-at-large to Taft on a delegate vote of 390 to 362, which resulted in giving Taft 14 and Roosevelt 34 of the Ohio delegation to the National Con-

vention, while upon the popular vote the delegation should have stood 40 to 8 for Roosevelt. In an interview Mr. Roosevelt called this "pure political brigandage."

The Maryland Primary.—In the primary election in Maryland May 6, Mr. Roosevelt came out with a small majority and won the 16 delegates from the state. By the Maryland primary plan delegates to the state convention are elected by the party voters, while at the same time the voters express their preference on the Presidential candidates. The state convention selects the delegates, who are required to carry out the preference expressed in the primary. A small majority of the delegates to the state convention were personally favorable to Mr. Taft, and it was feared by the Roosevelt forces that in some way they would annul the preference vote; but Governor Goldsborough, the leader of the Taft forces, declared that the convention should carry out in good faith the preference of the voters as expressed in the primary, and this was done.

The New Jersey and South Dakota Primaries.—In New Jersey, on May 28, Roosevelt won the primary vote, capturing all the 28 delegates of the state. He had a popular majority over Taft of 16,000. Two weeks later in South Dakota the last preferential primary was held (June 4) and Mr. Roosevelt carried the ten delegates from the state, receiving a larger popular vote than Mr. Taft and Mr. La Follette combined.

With the contests in New Jersey and South Dakota the popular campaigning for the Presidency came to a close. In all the popular elections within the party, Mr. Roosevelt had won, generally by large majorities, except in one state, Massachusetts, and in that state the delegates favorable to Mr. Roosevelt's nomination had been elected by the popular vote. In view of these results the Roosevelt adherents claimed that the only question now was whether the voters of the party, or its machine leaders and convention manipulators, should decide the Presidential nomination for the Republican party.

THE REPUBLICAN NATIONAL CONVENTION

The Republican National Committee.—The scene of the struggle was now transferred to the National Convention. The Republican National Convention assembled in Chicago, June 18. The national committee of the party, whose members were selected by the National Convention four years before had been in session for more than a week before the convention assembled, to make preliminary arrangements, and, as its chief business, to hear and determine the cases of contested seats. It was the function of this committee to nominate a temporary presiding officer and to make up the preliminary roll of the convention. The committee had invited Elihu Root, U. S. Senator from New York, to act as temporary chairman. Upon announcement of this fact Mr. Roosevelt issued a statement to the effect that Mr. Root's selection involved an issue not of persons, but of principles, and that Mr. Barnes, Republican boss of New York, was seeking Mr. Root's election as a repudiation

of the principles for which Roosevelt stood. The progressive leader urged it as the absolute duty of every Progressive Republican to oppose Mr. Root's election as one "put forward by the bosses and the representatives of special privileges and as opposed to progressive principles within the Republican party."

Contests Between Delegates.—In the function of making up the roll it is the business of the national committee to decide between the claims of contesting delegates to determine who have a right, in the first instance, to take seats in the convention. Under party usage the convention may overrule the committee, but in the pending cases it was well known that the decision of the committee would probably be final because of the close race between the rival candidates, and because the delegates seated by the committee would be allowed to vote on one another's right to retain their seats. The Roosevelt supporters now contended that the issue presented was whether the party

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machinery or the popular will should control in the proceedings. In the 13 states where the rank and file of the party had been given a chance to voice their opinion 36 La Follette delegates had been chosen, 48 Taft delegates, and 278 Roosevelt delegates. Where the selection had been made by conventions Taft had secured a majority. The Roosevelt advocates held that it was now up to the national committee to seek to carry out and not to thwart the popular verdict. The committee found before it 254 contested seats. It decided to open its sessions to the public and invited in representatives of five press associations. Mr. Roosevelt's friends wished to have admitted 100 or more newspaper reporters, which was denied. Victor Rosewater of Nebraska was elected chairman of the committee, in place of ex-Governor Hill, deceased. In two days 72 contested cases were decided, all of them in favor of Mr. Taft, the most of them by unanimous vote of the committee. These contests were mostly from the southern states where there is no real Republican party. From these states there are usually factional contests for seats in Republican National Conventions. The national committee gave the southern delegates to Taft. The Taft managers charged that the Roosevelt contests from these states were "fake" contests without any merit, presented to the committee to make it appear that the Roosevelt adherents were being "robbed" of their due. The Roosevelt supporters in the committee assented to the Taft decisions in the early part of the proceedings, but in certain others they protested vigorously.

Two of the contested cases may be taken as typical and as indicating the character of the charges brought against the committee by the Roosevelt supporters. In the Ninth District of Alabama a convention of 30 delegates had been held, 18 of whom were for Roosevelt and 12 for Taft. Two Roosevelt delegates were appointed to the National Convention, whereupon the Taft men withdrew, held a convention of their own and selected two Taft delegates. The national committee seated the two

Taft men on the ground that the certificate of the chairman of the first convention as to what had been done was proved untrustworthy by affidavits of men who were present. In the Thirteenth Indiana District a convention of 97 delegates had been held. A chairman was elected by a majority of one-half a vote. On a *vice voce* vote in the convention the chairman declared two Taft delegates elected and immediately, amid disorder, declared the convention adjourned. Fifty-one of the convention made affidavits that they had voted for Roosevelt and three others that they had voted for other than Taft delegates. The national committee seated the Taft delegates on the ground that the decision and certification of the chairman could not be questioned. There were other notable contests from California, Washington, Missouri and elsewhere, on which the fairness of the committee's decision was impeached.

On June 10 the four delegates-at-large from Indiana were credited to President Taft. During the week of its deliberation, out of the 254 seats contested, the committee awarded 235 to delegates favorable to Taft and 19 to delegates favorable to Roosevelt, and it made up a convention roll with about 560 delegates for Taft, or about 20 above a majority.

Roosevelt Arrives in Chicago.—Mr. Roosevelt when he learned that one contest had been decided in his favor and 140 against him decided to go to Chicago to oversee the convention struggle in person. William Flinn, his Pennsylvania lieutenant, asserted that if Taft were nominated by a "stolen roll" of delegates, the Republican Presidential electors of Pennsylvania, already nominated, would vote in the Electoral College for Roosevelt. Governor Glasscock of West Virginia announced that similar action would be taken in his state. On arriving at Chicago on June 15 Mr. Roosevelt stated that he felt "like a bull moose," a phrase which later gave a popular name and symbol to the new Progressive party. He asserted that the "people had spoken and the politicians will be made to understand that they are

the servants and not the masters of the rank and file of the plain people of the Republic." There were charges and countercharges of desperate measures designed to wreck or defeat the party and of attempted bribery of the negro delegates from the South. There were, also, bitter controversies before the committee. Governor Johnson of California, a supporter of Roosevelt, refused to appear before the committee in a contest in the California delegation, saying that he would not "submit the title of property to a trial by the thief who steals it."

The Convention: The Chairman's Speech.—After the National Committee had completed the roll of the convention, it was apparent that the Taft forces in the organization of the convention would be able to control the committee on credentials, which would then be sure to confirm the decisions of the national committee and thus the Taft delegates would be permitted to retain their seats. At the opening session of the convention Governor Hadley of Missouri moved to put certain Roosevelt contestants on the temporary roll. This was ruled out of order. In order to draw Wisconsin's support from La Follette, the Roosevelt forces made Governor McGovern of that state their candidate for temporary chairman, but Senator Root, the nominee of the national committee, was elected to this position by a vote of 558 to 502. Mr. Root as chairman delivered the "keynote" speech. He made a plea for organized parties and for harmony and loyalty. He appealed to the minority (the Roosevelt supporters) to yield to the majority and to work for a united party. As to the wisdom and efficiency of the Republican party, he challenged "the judgment of the American people on the policies of McKinley, Roosevelt and Taft," and he asserted that the policies of Taft's administration had been entirely in harmony with those of McKinley and Roosevelt. He recounted the achievements of the Taft administration in controlling the trusts and industrial combinations, in services for labor, in establishing a Children's Bureau, in passing mining legislation and en-

forcing the pure-food law, in the conservation of national resources, in economy in administration, in establishing the postal savings system, the parcels post, and in the construction of the Panama Canal. Mr. Root asserted that the Republican party should observe the restrictions and limitations of the Constitution and "uphold at all times the authority and integrity of the courts, state and federal, and insist that their powers to enforce their process and to protect life and liberty and property shall be preserved inviolate."

The Committee on Credentials.—After the chairman's speech Governor Hadley renewed his motion to seat 92 of the Roosevelt delegates. This was now referred to the committee on credentials. At the first meeting of this committee, the Roosevelt men, seeing that the findings of the national committee on their contests would be approved, refused to continue the contest. On the morning of June 20, the third day of the convention, Mr. Roosevelt announced that he was "through." He asserted that he had fairly won before the people, but that the controlling forces of the convention had set out to cheat him. He advised his delegates not to commit themselves to act any further in association with a fraudulent majority. The Roosevelt supporters urged 48 claims before the committee on credentials and had others which, as they felt, they might properly urge, but the committee by large majorities approved the decisions of the national committee. Roosevelt published a statement asserting that the majority had been robbed, and he urged that his supporters should take no further part in the convention, except by silent protest against the proceedings. He announced that he was willing to accept a progressive nomination.

The Nominations.—The convention on Saturday, June 22, approved the report of the committee on credentials on all the contests. Henry J. Allen of Kansas announced that the Roosevelt delegates would no longer share the responsibility for the convention's acts. He read a message from Mr. Roosevelt, who said that

the committee, under the direction of Mr. Taft, had stolen 80 or 90 delegates and defeated the will of the people; that the convention, having refused to purge the roll, no longer represented the party, and that the Roosevelt delegates should decline to vote.

Mr. Fairbanks of Indiana, chairman of the committee on resolutions, offered the platform. A La Follette progressive platform was offered as a substitute on behalf of Wisconsin, but was tabled after brief argument. For the platform there were 666 votes, 53 opposed it, and 343 remained silent. W. G. Harding of Ohio made a speech putting Taft in nomination, calling the President "the greatest progressive of the age." The nomination was seconded by John Wanamaker of Philadelphia, and Nicholas Murray Butler, president of Columbia University. Michael B. Olbrich of Wisconsin nominated Senator La Follette, and this nomination was seconded by R. M. Pollock of North Dakota. On the roll call 561 voted for Taft, 107 for Roosevelt, 41 for La Follette, and 344 were silent. There were 17 votes for Senator Cummins and two for Justice Hughes. For Vice-President New York nominated Mr. Sherman, and the nomination was seconded by Ohio. A roll call gave 597 votes for Sherman against a few scattering votes, while 352 delegates remained silent.

The Republican Platform.—This document, as reported by the committee on credentials and adopted by the convention, proclaimed that the Republican party had always been a party of progress, of "advanced and constructive statesmanship." It declared the "unchanging faith of the party in government of the people, by the people, for the people," and expressed "veneration and gratitude" for the memory of Lincoln. It favored the following:

1. Support for our self-controlled representative democracy, which is "a government of laws, not of men."

2. The principles of constitutional government which make provision for orderly and effective expression of the popular will and for the interpretation of the law by an untrammelled and independent judiciary.

3. The progressive solution of all pressing economic, social and political problems, to limit the labor of women and children and to enact generous compensation laws for workmen.

4. The enforcement of the limitations imposed upon themselves by the people for the protection of civil liberty.

5. The upholding of the authority of the courts, which must enforce constitutional requirements until they are altered by the orderly process of amendment.

6. Legislation to prevent delays in legal procedure.

7. Opposition to the recall of judges as unnecessary and unwise.

8. A simpler process than impeachment for removing unworthy judges.

9. The peaceful settlement of international disputes by an international court.

10. Opposition to special privilege and monopoly, with the regulation of corporate monopoly by means of "a federal trade commission, thus placing in the hands of an administrative board many of the functions exercised by the courts."

11. Supplementing the anti-trust law by a definition of criminal offenses.

12. Maintenance of a protective tariff, with a reduction of duties that may be too high, and with a general readjustment of duties by means of accurate information obtained by an expert commission.

13. Arraignment and condemnation of the recent Democratic tariff bills (see XIV, *Public Finance*) as sectional and destructive of business enterprise.

14. A scientific inquiry into the cost of living.

15. A revision of the banking and currency system.

16. An inquiry into agricultural credit societies in foreign lands for the sake of American farmers.

17. A civil service based on merit and a tenure of office based on good behavior and efficiency, "as far as possible."

18. Legislative prohibition of corporation contributions to campaign funds, and full publicity of campaign contributions, for party primaries as well as for general elections.

19. The establishment of a parcels post.

20. Conservation of national resources.

21. Condemnation of the Democrats for refusing to provide for new battleship construction.

22. Federal aid in controlling the Mississippi floods.

23. Opening Alaska coal lands by leases.

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24. Legislation to relieve the country from undesirable immigration.

25. Enactment of laws to protect life and property at sea.

26. Protection of American citizens abroad.

27. Ship subsidies.

The platform closed with a commendation of the administration's

effort to secure economy and efficiency in government business, a disapproval of lynchings, a challenge to successful criticism of the administrations of the last three Republican Presidents, with an invitation to the people to pass intelligent judgment upon the record of the administration of President Taft.

THE DEMOCRATIC PRE-CONVENTION CAMPAIGN

Conflicting Tendencies Within the Party.—The stress and heat of the contest for the Presidential nomination within the Republican party absorbed the greater part of public attention and diverted notice from the contest within the Democratic party. This was true even while there was general public expectation that, owing to the divisions within the Republican party, the nominee of the Democratic party would be the next President of the United States. But in this party, also, there were sharp rivalries among the several candidates and a notable struggle between the radical and conservative wings of the party.

The Call for the Democratic National Convention.—The Democratic National Committee met in Washington, D. C., Jan. 8-10, 1912. A "call" was issued for a "National Convention of the Democratic party" to meet in Baltimore, Md., June 25, 1912, for the purpose of nominating a Presidential ticket and announcing a platform of policies and principles. The conflict between the machine politicians and reactionary elements on the one hand and the progressive Democrats on the other, appeared in the committee in the first attempt at official action on behalf of the party. Wm. J. Bryan, sitting in the committee with the proxy of the Nebraska member, sought to exclude from the committee James M. Guffey, the Pennsylvania "boss" who had been appointed by the state committee of Pennsylvania to fill a vacancy. This seat was contested by A. Mitchell Palmer, representing Democratic "Reorganizers," on the basis of recent public expressions of the opinions of the Democratic rank and file in Pennsylvania. In this attempt Mr. Bryan was defeated by

a vote of more than two to one in the committee.

In the committee's "call" for the convention the number of delegates was based, as in the Republican party, on the Congressional Apportionment Act of August, 1911, which had been based on the census of 1910. The Democratic National Committee allotted six delegates each to Alaska, District of Columbia, the Philippines, Hawaii and Porto Rico, making the full convention number 1,092 delegates, with 728 votes (two-thirds) necessary to a choice in making a Presidential nomination. The committee's "call" left the decision as to primary election of delegates to the "discretion of the state and territorial party committees," except as to the states whose law requires such primaries; and if the state and territorial party committees concluded that sufficient safeguards could not be provided for the primary election of delegates, then the delegates and alternates were to be elected as they had been to the last Democratic National Convention.

Opposition to the Candidacy of Judson Harmon.—On Jan. 2 a Progressive Democratic League of Ohio was organized, with ex-Congressman John J. Lentz as president. The resolutions of the league declared that "to protect the Progressive Democrats of Ohio against the possibility of any traitor among their 48 delegates to the National Convention it is imperative that no advocate, associate, protector, ally, agent, counsel, attorney, receiver, champion, or hireling of Wall street or other predatory interest be chosen as a delegate." This was a movement within Ohio to prevent the Democrats of that state from sending a delegation to Baltimore in support of

Governor Harmon's candidacy for President.

Governor Harmon of Ohio made his first campaign speech for the Presidency at Chicago on Jan. 11, speaking under the auspices of the Iroquois Club. He declared for tariff reform, regulation of trusts and economy. He spoke also at East St. Louis, Columbus, Milwaukee and St. Paul. Later, about March 20, Mr. Bryan announced in his weekly paper, the *Commoner*, that he regarded Mr. Harmon's candidacy as inimical to true Democracy. He asserted that Harmon could not be nominated without the active aid of the "interests," that his nomination would not make a Democratic victory worth while. He gave it to be understood that if the Democrats of Nebraska by their primary instructed for Harmon, he (Bryan) would refuse to serve as a delegate from the state in case he were elected, but that he would go to Baltimore as an individual to do what he could to secure the nomination of a Progressive Democrat. On April 15, with an opening speech at Revenna, Mr. Bryan entered upon a week's speaking campaign in Governor Harmon's own state, opposing the nomination of Harmon. During the campaign Mayor Baker of Cleveland joined Mr. Bryan in opposition to Governor Harmon.

Bryan's Assent to the Candidacy of Champ Clark.—Ex-Governor Folk and Speaker Champ Clark, both of Missouri, were rival contestants for the Presidential nomination. Wm. J. Bryan, with apparent friendliness to both men, proposed that they agree to a division between them of the delegates from Missouri in order to prevent the conservative Democrats from winning the delegation from Missouri through a division among the progressive elements of the party. Mr. Clark at that time appeared to Mr. Bryan to be a satisfactory progressive. Mr. Clark assented to this proposal in a letter to Governor Folk, whereupon the latter, recognizing with Mr. Clark that "personal ambition should be subordinated to the interest of our party in Missouri," withdrew from the contest and asked his friends to

join in an effort to give Mr. Clark the united support of Missouri.

State Primaries and Conventions.—In the primary contest in Illinois (April 12) Speaker Clark carried the Democratic vote of the state as against Governor Woodrow Wilson of New Jersey, by a majority of over 130,000. Clark's candidacy was favored in Illinois by Wm. Randolph Hearst and his daily newspapers, which denounced Governor Wilson as showing narrow hostility to foreign-born Americans and to organized labor. In the Pennsylvania primaries, Governor Wilson won all the delegates but two, these two going to Clark (April 13). In Wisconsin, on April 13, Wilson received 45,504 votes to 36,251 for Clark, with 19 delegates pledged to Wilson, while six were pledged to Clark.

On April 19 primaries were held in Nebraska and Oregon. In Oregon Governor Wilson led his opponents. In Nebraska Speaker Clark came first in the voting, Governor Harmon second, Governor Wilson third. Mr. Bryan was elected as a delegate from Nebraska. So far, while he had opposed the candidacy of Governor Harmon and Mr. Underwood, he had expressed no preference as between Governor Wilson and Speaker Clark.

In Pennsylvania, on May 7, both factions of the Democratic party, in convention assembled, endorsed Governor Wilson, and the state delegates to the National Convention were instructed for him as the Presidential nominee. On April 17 Oscar W. Underwood was endorsed by the Democratic convention of Alabama as the choice of the state for President and the state's delegation to the National Convention was instructed to vote for him "until a nomination shall have been made."

In California, on May 14, Clark carried the Democratic primaries against Wilson by about 20,000 majority.

On May 16 the Iowa Democratic convention instructed its national delegates to vote as a unit for the nomination of Clark.

In the Ohio primaries on May 21 Governor Harmon obtained 40 out of the 48 state delegates to the National Convention, while in New

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Jersey, on May 28, Wilson obtained 24 delegates out of the 28 in that state, with a popular plurality of about 16,000.

By the first week in June the con-

ventions and primaries had closed, with Speaker Clark considerably in the lead in the number of delegates pledged, but without a majority pledged to his nomination.

THE DEMOCRATIC NATIONAL CONVENTION

The Election of Temporary Chairman.—The Democratic Convention at Baltimore followed closely upon the Republican Convention at Chicago. It proved to be not only the longest Presidential convention ever held, except the Democratic Convention of 1860, when the party split over slavery, but also one of the most dramatic, significant and sensational in party annals.

A sub-committee of the party national committee met June 20 in Baltimore to arrange for the temporary organization. Alton B. Parker of New York, Democratic candidate for President in 1904, was chosen by the committee for temporary chairman. When this became known William J. Bryan, who was in Chicago reporting the Republican Convention for a syndicate of newspapers, telegraphed certain of the candidates whose names were to appear before the Baltimore Convention—Speaker Clark, Governor Wilson of New Jersey, Governor Burke of North Dakota, Governor Marshall of Indiana, Governor Foss of Massachusetts, Governor Baldwin of Connecticut, and Mayor Gaynor of New York City—urging them to unite with him in preventing the election of Parker as “the one Democrat who, among those not candidates for the Presidency is in the eyes of the public most conspicuously identified with the reactionary element of the party.” Governor Wilson responded favorably, wishing to leave no one in doubt as to where his sympathies lay, and expressing the belief that the convention should be a convention of progressives, of men progressive in principle and conviction; and he urged that these convictions should be expressed both “in the organization of the party and in the men who are to speak for it.” Speaker Clark replied with a party “harmony” of all party

On June 23 Mr. Bryan, having arrived in Baltimore, proposed that Clark and Wilson, as the two leading candidates for President, agree upon a progressive as temporary chairman, and the friends of Wilson offered to accept Senator Ollie James of Kentucky, a supporter of Clark. These suggestions were ignored and the outgoing national committee, by a vote of 31 to 20, reported Parker for temporary chairman.

Upon the assembling of the convention at noon of the 25th Mr. Bryan nominated Senator Kern of Indiana for temporary chairman, and appealed to the delegates to let the opening of the convention be a bold defiance of the bosses and the plutocracy. Immediately following Mr. Bryan's speech Senator Kern arose, made a plea for harmony, and speaking directly to Mr. Parker, proposed that the two agree upon a chairman and withdraw their own names from before the convention. Receiving no response, Senator Kern then proposed in succession as compromise candidates a number of United States Senators, O'Gorman of New York, Culberson of Texas, Clayton of Alabama, Lea of Tennessee, and Shively of Indiana. Again there was no response, and Senator Kern nominated Bryan in his own place for temporary chairman. “If none other can be agreed upon,” said Bryan, “I will lead the fight myself.” The convention, however, finally chose Parker over Bryan by a vote of 579 to 510.

The Platform Committee.—When Parker ascended the platform to give his “keynote” speech the confusion in the hall was so great that he was unable to make himself heard. Consequently the convention voted a recess until the evening, when Mr. Parker completed his address. The temporary chairman was conciliatory toward Mr. Bryan and he urged, with the approval of his conservative sup-

porters, that Bryan be made chairman of the platform committee, of which Mr. Bryan was a member from Nebraska. This place was offered to Mr. Bryan by the unanimous vote of the convention, but it was declined. Failing to induce Mr. Bryan to cooperate in their management of the convention the platform committee selected Senator Kern, a Bryan follower, as chairman.

The Election of Permanent Chairman.—The conservative element in control, still seeking Bryan's progressive leadership, offered him the permanent chairmanship of the convention. Mr. Bryan again refused, saying that he did not regard it as a compliment to be tendered the position by those who had defeated him for the temporary chairmanship, and that he did not feel disposed to accept any responsibility for the conduct of the convention until it had done something to purge itself of its reactionary character. The leaders in control then chose for permanent chairman Senator Ollie James of Kentucky, who had been a friend and progressive follower of Bryan.

The Fight over the Unit Rule.—On June 26 Mr. Bryan and his progressive followers gained a favorable decision and a notable triumph in the convention on the issue as to whether or not the unit rule should be allowed to override the presidential preference primary law of a state. The case came up from Ohio and the result was a defeat of Governor Harmon, one of the Presidential candidates. In the Ohio Democratic state convention at Toledo, June 4, the friends of Governor Harmon were in control, and the convention instructed the delegation for Harmon and adopted the unit rule. Mayor Baker of Cleveland, who led the opposition to Harmon in the Toledo convention on behalf of Governor Wilson, held that the unit rule should hold only when a state convention could speak for the people of the state as a whole, and that when a state law empowers the people of any district of the state to instruct their delegates, the state convention should not be allowed to override those instructions. The credentials committee, as constituted by the

"organizers" of the convention, overruled Mayor Baker's contention, but Baker won his point on the floor of the convention by a vote of 491½ to 465½. The chair was instructed to recognize and enforce the unit rule "except in such states as have by mandatory statutes provided for the nomination and election of delegates to national conventions in congressional districts."

The Bryan Resolution.—On the evening of the 27th one of the dramatic and one of the most significant events of the Convention occurred. Mr. Bryan introduced the following resolution, asking unanimous consent for its consideration:

Resolved, that in this crisis of our party's career and in our country's history this convention sends greeting to the people of the United States and assures them that the party of Jefferson and Jackson is still the champion of popular government and equality before the law. As proof of our fidelity to the people, we hereby declare ourselves opposed to the nomination of any candidate for President who is the representative of or under obligations to J. Pierpont Morgan, Thomas F. Ryan, August Belmont, or any other member of the privilege-hunting and favor-seeking class; and be it further

Resolved, that we demand the withdrawal from this convention of any delegate or delegates constituting or representing the above named interests.

Mr. Ryan and Mr. Belmont were sitting as delegates in the convention, the one from Virginia, the other from New York. The resolution aroused anger and excitement. Strong opposition was made to its consideration, points of order being raised against it. Mr. Bryan moved that the rules be suspended for its consideration; Chairman James ruled that the convention had a right so to proceed and discussion followed. Mr. Bryan admitted that the resolution was extraordinary, but asserted that extraordinary conditions require extraordinary remedies; that there was "not a delegate in the hall who did not know that an effort was being made to sell the Democratic party into bondage to the predatory interests of the country." Mr. Bryan then proposed that if the majority

of the New York delegates would on roll call, where the delegates can have their names recorded and printed, ask for the withdrawal of the name of Mr. Belmont, and if Virginia would on roll call protest against the enrolment of Mr. Ryan, he (Bryan) would then withdraw the last part of his resolution.

Congressman Flood, of Virginia, who had been instrumental in securing the appointment of Mr. Ryan, as a delegate from Virginia, replied to Mr. Bryan with passionate heat. "In the name of the sovereign state of Virginia," he said, "I accept the insolent proposition made by the only man who wants to destroy Democratic success."

Mr. Bryan then withdrew the last part of his resolution, saying that he did not propose that any delegate should shield his negative vote against the principal part of the resolution by hiding behind the last part. Objection was made to his so changing his resolution, but the Chair ruled that he might perfect it as he chose. Bryan's resolution was then passed by the overwhelming vote of 899 to 196, the solid vote of New York being cast in the affirmative as a tactical move in order to bring the resolution to ridicule.

The Nomination of Candidates.—Nominations of candidates for President followed immediately upon the adoption of Bryan's resolution, and in this the convention followed the unusual order of proceeding to nominate the Presidential candidate before adopting a platform. This order of procedure was in harmony with Mr. Bryan's advice, who said that the platform would not amount to much unless the candidate stood squarely upon it and was able to defend it; that a joint debate between the platform and the candidate would be fatal to the prospects of the party; and that by changing the order the convention would be able so to shape the platform utterances as to give force to the candidacy.

When the Convention was ready for the nominations, John W. Bankhead, of Alabama, nominated Oscar W. Underwood, of that state: Sen-

ator Reed, of Missouri, nominated Speaker Champ Clark; Henry Wade Rogers, for Connecticut, nominated Simeon E. Baldwin; Senator Shively, of Indiana, nominated Governor Thomas R. Marshall; John W. Westcott, for New Jersey, nominated Governor Woodrow Wilson; M. A. Dougherty, for Ohio, nominated Governor Judson Harmon; S. J. Boyle, of North Dakota, speaking for Governor Burke, of that state, released the delegation from voting for Burke.

The Ballots.—On the first ballot the vote stood as follows: Clark 440½, Wilson 324, Harmon 148, Underwood 117½, Marshall 31, Baldwin 22, Sulzer 2, Bryan 1.

After the first ballot the convention adjourned till 4 p. m. of the 28th. It then remained in session, except for a brief intermission in the evening, till 3:30 on the morning of the 29th. In this period 11 ballots were taken. There was no material change until the tenth ballot, when the New York delegation, by a vote of 81 for Clark to 8 for Wilson, transferred (by applying the unit rule) its entire 90 votes from Harmon to Clark; this ballot stood: Clark, 556; Wilson, 350½; the minor candidates following about as before. On the twelfth ballot Clark received 547½, Wilson 354. Mr. Bryan, whose vote was counted for Speaker Clark under the instructions of the Nebraska primary, was known to be supporting Governor Wilson by his personal influence.

Bryan Abandons Clark.—On June 29, 12 ballots were taken in a session without intermission, from 1 p. m. till 11 o'clock at night. There was no significant change till after the fourteenth ballot. In the course of that ballot Mr. Bryan read a statement to the convention that thereafter he would give his vote to Wilson instead of to Clark. The statement of Mr. Bryan is one of the most remarkable in the history of political conventions, distinguished by an uncompromising boldness of leadership against reactionary influences. It resulted, as a final outcome, in the defeat of Mr. Clark, and the nomination of Mr. Wilson, though Clark had already led Wilson by 200 votes in the convention,

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and had carried a majority of the delegates. Bryan announced Nebraska as a progressive state, and so far as he could control its vote, he would give it to no man who "was obligated to Morgan, Ryan, Belmont, or any other member of the privilege-seeking, favor-hunting class." Mr. Bryan called attention to the fact that Mr. Clark's supporters had proclaimed him as a progressive and denied all coöperation between him and the reactionary element of the party. On no other condition could he have received the plurality of the Democratic vote in Nebraska, and these delegates for whom Mr. Bryan spoke, "will not participate in the nomination of any one whose nomination depends upon the vote of the New York delegation."

Speaking for myself [said Mr. Bryan], I withhold my vote from Mr. Clark as long as New York's vote is recorded for him. And the position that I take in regard to Mr. Clark I will take in regard to any other candidate whose name is now or may be before the convention. I shall not be a party to the nomination of any man, no matter who he may be or from what section of the country he comes, who will not, when elected, be absolutely free to carry out the anti-Morgan-Ryan-Belmont resolution and make his administration reflect the wishes and the hopes of those who believe in a government of the people, by the people, and for the people.

The totals of the last ballot of the day (the 26th), after Mr. Bryan had defined this position for himself and his followers, were as follows: Clark, 554. $\frac{1}{2}$; Wilson, 407. $\frac{1}{2}$. Near midnight the convention adjourned till Monday, July 1, at 11 a. m.

Clark Replies to Bryan.—The interval of Sunday was marked by a published protest from Speaker Clark, and a reply by Mr. Bryan. Senator Stone, of Missouri, the manager of the Clark forces in the convention, sought to induce a sufficient number of delegates to come to the support of his candidate, on the plea that the two-thirds rule had long since been abrogated by practice.

In his protest against Mr. Bryan's position, Speaker Clark spoke of the charge shrewdly made by implication that if he were elected Presi-

dent he would consider himself obligated to the men mentioned, and that he would be under the control of those influences.

It would be unbecoming [said Mr. Clark] in one holding my present official position to express the indignation which I feel at these veiled aspersions upon my character. As Speaker of the House of Representatives, as a life-long Democrat, proud of my party, as an American I pronounce Mr. Bryan's implied accusations both false and infamous.

In a syndicate letter to American newspapers Mr. Bryan maintained his ground. He asserted that the same influences, which at Chicago had defied popular sentiment in the Republican party, were at Baltimore in force. Bryan referred to the political career of Mr. Clark with approval, and expressed his distress at having to do anything that might injure Clark's political fortunes.

The convention resumed its session on July 1. On the twenty-eighth ballot, for the first time, Wilson led Clark by a vote of 460 to 455. The final ballot in this day's session gave Wilson 494, Clark 430, the convention adjourning at midnight. It was reported at this stage of the convention that Bryan had under consideration a plan for a recess until August, with nation-wide preferential primaries in the interval.

The Nomination for President.—The convention reassembled at noon of the 2nd. On the forty-third ballot Wilson's vote rose to 602, Clark's fell to 329. Speaker Clark came hurriedly from Washington to Baltimore hoping to strengthen his forces, but he learned that Illinois had decided to change from Clark to Wilson with its 58 votes under the unit rule, the caucus of the delegation voting 40 for Wilson, 18 for Clark. On the forty-sixth and final ballot, Wilson was nominated by a vote of 990, Clark receiving 84, Harmon 12. On the motion of Senator Stone, the manager of the Clark forces, the nomination of Governor Wilson was then made unanimous. On the final ballot New York transferred its vote from Clark to Wilson, but it was too late to make the New York vote necessary to Wilson's

nomination. During the proceedings on July 2, John B. Stanchfield, a New York delegate made a bitter speech attacking Mr. Bryan on account of the latter's attitude toward the New York delegation. He denounced Bryan as "a selfish, money-grabbing, favor-seeking, office-chasing, publicity hunting marplot."

The Nomination for Vice-President.—Prior to choosing the candidates for Vice-President, and under a suspension of the rules, the convention received from Senator Kern, chairman of the committee on resolutions, a platform of principles and policies, which the convention adopted without dissent. After nominating Governor Thomas R. Marshall, of Indiana, for Vice-President, the convention adjourned at 1:53 a. m. of July 3.

Mr. Bryan had been urged to accept the second place on the ticket, but he declined for the reason, as he said, that he might serve his country better without the embarrassment of a nomination, and because he had been in so many battles, and had alienated so many men that the party ought to have the leadership of men who had not so offended, and who might lead with greater hope of victory.

At the close of the convention, Speaker Clark in an interview said: "I lost the nomination solely through the vile and malicious slanders of Colonel William Jennings Bryan, of

Nebraska. True, these slanders were by innuendo and insinuation, but they were no less deadly for that reason. He, however, advised his friends to give the ticket loyal support, as he looked upon Wilson as the "innocent beneficiary" of Mr. Bryan's "infamous tactics."

The Democratic Platform.—The following is a summary of the demands contained in the platform:

1. A tariff for revenue only on the ground that a protective tariff is unconstitutional.
2. The addition of federal remedies to state remedies, as opposed to their substitution therefor, in the regulation of interstate commerce.
3. An income tax.
4. Direct election of United States senators.
5. Presidential-preference primaries.
6. Prohibition of campaign contributions by corporations and a limitation on individual contributions.
7. A single term for the President, with an amendment to the Constitution providing therefor.
8. Regulation of interstate public utilities.
9. Depositories for public funds by competitive bidding in place of the present favoritism.
10. Conservation of natural resources and development of waterways.
11. The labor declarations of the Denver platform of 1908.
12. Parcels post and the extension of rural delivery.
13. Opposition to trusts, to the Aldrich currency bill, and to usurpation of state functions by federal power.

THE PROGRESSIVE PARTY

Beginnings of the New Party.—At the close of the Republican convention, on the evening of June 22, the Roosevelt delegates, claiming to be a majority of the uncontested delegates in the Republican National Convention, with their alternates and thousands of Roosevelt followers, held a meeting in Orchestra Hall. Governor Johnson, of California, called the meeting to order and Senator Clapp, of Minnesota, was made chairman. The delegates there adopted resolutions declaring that they had been delegated by the majority of the Republican voters in their respective states to nominate Theodore Roose-

velt for President. They had for five days striven to carry out their instructions; justice had been denied; a defunct national committee had made up a fraudulent roll; the fraudulent delegates once seated had by concert of action retained their places and defeated the party will. In harmony with their instructions from the voters of their states and, they believed, the majority of the Republican party, they invited Mr. Roosevelt to accept the nomination of a new party. Mr. Roosevelt appeared at 11:30 p. m. and spoke till 12:30. He thanked the assembly for its action, and said that he would accept the nomination on one con-

dition. The contest now entered upon could not be settled along old party lines. "The time has come," he said, "when not only all men who believe in progressive principles but all men who believe in those elementary maxims of public and private morality which must underlie every form of successful free government should join in one movement." He, therefore, asked those assembled to go to their homes, ascertain the sentiment of their people, and then again to assemble in convention, nominate a progressive candidate on a progressive platform that would appeal to people of all parts of the country. "If you wish me to make the fight I will make it, even if only one state should support me," said Mr. Roosevelt. "The only condition I impose is that you should feel entirely free when you come together to substitute any other man in my place if you deem it better for the movement, and in such case I shall give him my heartiest support." The Republican convention, he continued, had been controlled by sinister political bosses, the roll had been fraudulent, he had been cheated out of the nomination and if such practices were to be condoned and should meet with permanent success, it would mean the downfall of the Republic. Wherever the Republican party was true to the principles of its founders and stood for justice and progress, it would come into the movement, "for the convention that had just sat in Chicago is in no proper sense of the word, a Republican Convention at all."

The following day, June 23, at a conference with Governor Johnson presiding, on motion of James R. Garfield, of Ohio, a provisional committee was appointed to devise a plan of action for the new organization. Such were the beginnings of the new Progressive Party.

The Call for a Progressive Convention.—On July 8 a call was issued in harmony with the decision of the meeting and conference just described, for holding a convention to organize a new party. The 5th of August was named as the day, and Chicago as the place. The "call" was addressed:

To the people of the United States, without regard to past political differences, who, through repeated betrayals, realize that to-day the power of the crooked political bosses and of the privileged classes behind them is so strong in the two old party organizations that no helpful movement in the real interests of our country can come out of either; who believe that a nation-wide progressive movement on non-sectional lines is desirable that the people may be served unfettered by conflicting interests; who believe in the right and capacity of the people to rule themselves, and effectively control all the agencies of their government, and who hold that only through social and industrial justice can honest property find permanent protection; who believe that government by the few tends to become, and has become, government by the sordid influences that control the few.

This "call" was signed by men representing 40 states, including Governor Johnson, California; Judge B. B. Lindsey, Colorado; Medill McCormick, Illinois; Henry J. Allen, Kansas; John M. Parker, Louisiana; Charles J. Bonaparte, Maryland; C. S. Bird, Massachusetts; Senator J. M. Dixon, Montana; Everett Colby, Geo. L. Record, and J. F. Fort, New Jersey; W. A. Prendergast, Oscar S. Straus, and Woods Hutchinson, New York; James R. Garfield, Ohio; E. A. Van Valkenburg, William Flinn, and Gifford Pinchot, Pennsylvania; Senator Miles Poindexter, Washington; H. M. Cochems, Wisconsin; and Governor Joseph M. Carey, Wyoming.

The Progressives in the States Before the National Convention.—Before the assembly of the National Convention, the Progressive-party movement was pushed forward in several of the states. On July 20, the Progressive Republicans of Michigan, in convention at Jackson, decided to place a full state ticket in the field, including Presidential electors, state, congressional, and legislative candidates. L. Whitney Watkins was nominated for governor, and Theodore M. Joslin for U. S. senator. The platform voiced the usual progressive demands, including the right to vote directly for Presidential candidates, and to elect national party committeemen by a direct vote of the people, and for

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the removal of the judiciary from politics.

In Illinois, party dissensions arose on the question of a straight-out Progressive party. A committee for the new party asked Governor Deneen to define his position. The Governor replied (July 22) that he had been regularly renominated for governor by the party primaries; he had accepted the nomination and the platform, and he had no right to change his party status, and he thought it strange that any Illinois Republicans, because they felt that they could not support the national ticket, should also oppose their state candidates, "whose nomination they do not question and who derive their credentials directly from themselves." Other candidates on the Republican state ticket made a like response. Thereupon a state convention was set by and for the Progressive Republicans of Illinois, to meet in Chicago, Aug. 3. It was announced that all who participated must first sign a pledge to support the candidates of the convention and stand upon its platform. This was done to prevent the convention from being captured by the friends of Governor Deneen, who was seeking support for reelection from both regulars and Progressives. In their state convention, Prof. Chas. E. Merriam, the temporary chairman, sounded the keynote of secession from the Republican party; he announced the Progressive intention "to form an entirely new party, abandoning the old organization, and bringing together elements from both of the two old parties." A vigorous and radical Progressive platform was adopted. Frank H. Funk, a state senator, was nominated for governor with a full state ticket, and a delegation was sent to the National Convention, including Jane Addams, of Hull House, Mary J. Wilmarth, and Medill McCormick.

The Iowa Republicans refused to endorse the nominations and platform of the Republicans' National Convention (July 10). They resolved that they "believed in the rule of the people, which should be faithfully observed," and they feared that "grave and serious abuses of

the convention system had brought the party to a condition in which great numbers of our loyal adherents question the integrity of the nominations made at the National Convention." The party adherents were urged, however, to stand loyally by their state and local nominees. Later a separate Progressive convention was held in Des Moines, and a separate ticket provided for.

In New Jersey, at Asbury Park, July 23, a Progressive state convention decided to nominate a full state ticket and a complete set of Roosevelt electors. The platform committed its supporters "to support no candidate for public office who is not an avowed supporter of the candidacy of Mr. Roosevelt for President of the United States." It called for the usual Progressive measures, including Government ownership and operation of express, telegraph, and telephone service, and such revision of the patent laws as will make them no longer a shelter for monopoly; to this end it was proposed that all future patents should be open to public use on payment of a royalty to be fixed by the Government.

In Vermont, at Burlington, July 23, the Progressives nominated an entire state ticket. The Rev. Francis Metzger was named as the party candidate for governor. July 24, a delegation was appointed to attend the National Progressive Convention at Chicago on Aug. 5, and a state organization was provided for. The platform declared for Roosevelt, and urged the Progressive policies.

In Utah, July 27, a state convention of the Progressives, at Provo, expressed regret at leaving the Republican party, but decided to organize a separate party and place tickets in the field "for every office from governor to constable."

The Wyoming Progressives endorsed Roosevelt in state convention on July 28.

The Progressive convention of Massachusetts was held in Faneuil Hall, Boston, July 27. Delegates were chosen to the National Convention, three of them being women. C. S. Bird, a popular and well known manufacturer was nominated for

governor. It was decided that no old party candidate for any office should be endorsed until he "unqualifiedly takes his stand for Roosevelt and Progressive principles."

On July 29, the Progressives of Montana and New Mexico organized in state conventions and elected national delegates to Chicago.

In Nebraska, on July 30, there was a split in the Republican state convention, the minority withdrawing in support of President Taft. The majority, under the leadership of Governor Aldrich, endorsed Roosevelt and adopted a Progressive platform, favoring individual liberty, equality of opportunity, and the right of the whole people to dictate the policies of the Government.

In Minnesota, on July 30, the Progressive party organized in state convention and proposed to apply the Progressive test to every Republican nominee, state and local, and if any were found to be not in sympathy with the Progressive movement, nominees were to be put up by petition in their stead.

In Connecticut, on July 30, the Progressives, at New Haven in state convention, elected delegates to the National Convention. A platform was adopted and a state party was organized. Herbert Knox Smith, who later resigned from the Bureau of Corporations, was named for governor.

In Indiana, early in August, the Progressives held a state convention and nominated a full state ticket with ex-Senator Albert J. Beveridge at its head for governor. Congressional and county tickets were urged upon the local adherents of the cause.

The National Progressive Convention.—The National Progressive Convention met at Chicago Aug. 5. There were 18 women delegates in the convention, prominent among whom was Miss Jane Addams of Chicago. These were escorted to the convention by a procession of equal suffragists, carrying banners inscribed with demands for "Votes for Women." Senator Dixon, of Montana, called the convention to order. Ex-Senator Albert J. Beveridge, of Indiana, was made tem-

porary chairman. In his "keynote" address Senator Beveridge announced that the new party stood for "an undivided nation, social brotherhood, a representative government that represents, for fuller justice, and against savage individualism." He continued:

We mean to remedy untoward conditions, to pass prosperity around, to make human living easier, to free the hands of honest business, to make trade and commerce sound and healthy, to protect womanhood, to save childhood, and restore the dignity of manhood, and to restore the government to the people to whom it belongs.

The eloquence of Senator Beveridge aroused the men and women of the convention to a high pitch of enthusiasm. The convention, with ten thousand people in attendance, sang fervently the "Battle Hymn of the Republic," and "Onward Christian Soldiers," and the demonstrations and spirit that was manifested led even hostile newspapers' correspondents to report that nothing like this convention had ever before been known in American politics; that it seemed more like a religious assembly imbued with a humanitarian spirit of enthusiasm and devotion.

Roosevelt's "Confession of Faith."—After the organization and opening speech, committees were appointed and the convention adjourned for the day. On the 6th Mr. Roosevelt was introduced by the chairman as "the guest of the Convention." He was received with an enthusiastic demonstration that lasted an hour, and made an address at length. He spoke forth his "confession of faith," which the *New York Times*, a strong opponent of Roosevelt, called "the best, the ablest, the most persuasive of all his public utterances." He reiterated the charges against the Republican Convention, holding that both parties were boss-ridden and privilege-controlled. The country was facing a great economic evolution, and it must go forward along the path of social and economic justice. The first essential is the right of the people to rule. For this he would use the initiative, referendum, recall, direct primaries, direct election of senators,

and "it should be understood that the American people, and not the courts, are to determine their own fundamental policies." He called the attention of the people to the need of dealing in far-reaching fashion with our human resources and labor power.

The first charge on the industrial statesmanship of the day is to prevent human waste. The dread of orphanage and depleted craftsmanship, of crippled workers and workers suffering from trade diseases, of casual labor, of insecure old age, and of household depletion due to industrial conditions, are, like our depleted soils, our gashed mountain sides and flooded river bottoms, so many strains upon the national structure, draining the reserve strength of all industries, and showing beyond all peradventure the public element and public concern in industrial health. . . . The most pressing and immediate need is to deal with the cases of those who . . . are not only in need themselves, but, because of their need, tend to jeopardize the welfare of those who are better off.

To this end Mr. Roosevelt proposed that all employers be required "to file for public purposes such wage scales and other data as the public element in industry demands"; that minimum-wage commissions should be established in the nation and in each state; that all efforts should be made to secure a "living wage" and reasonable working hours for labor; that the employment of women and children should be properly limited. Mr. Roosevelt discussed the problem of the trusts at length, proposing "to control, not to strangle, business" by a national commission that could control all great industrial concerns, preventing all anti-social practices. He uttered the prophecy that the fight might be won if the people could be awakened to realize what the fight really meant, as "the cause is based on the eternal principles of righteousness; and though it may for a time fail, it will win in the end." He closed with what came to be a familiar battle cry, "We stand at Armageddon, and we battle for the Lord." At the conclusion of his address, the report of the committee on credentials was adopt-

ed without opposition, the temporary officers were made permanent, and the convention adjourned to the 7th.

The Race Question Among Progressives.—A race question had arisen in the committee on credentials relative to the admission of negro delegates from southern states. In Florida two state conventions had been held to appoint delegates, one of which included negroes in its delegation. There were also two delegations from Mississippi, an all white delegation appointed by a state convention, the call for which had been to whites only, and a mixed delegation from another convention, called regardless of race or color. The former, known as the "Fridge" delegation, was seated by the committee on credentials, whose resolution adopted by the convention, disavowed that part of the call containing the word "white." The result of this decision was that while there were negro delegates in the convention from north of the old Mason and Dixon's line there were none from the south of it.

The Candidates and the Platform.—On Aug. 7 the new party adopted its platform, nominated its candidates and adjourned. Theodore Roosevelt, of New York, and Governor Hiram Johnson, of California, were nominated for President and Vice-President. The "Progressive Party" was chosen as the official name of the party. The platform declared that the new party was "born of the nation's awakened sense of justice," with a mission to destroy "the invisible government," that sits enthroned behind the "ostensible government," and "to dissolve the unholy alliance between corrupt business and corrupt politics." The chief demands of the platform declared for:

1. The "principle of self-government" by a self-controlled democracy expressing its will through representatives.
2. Direct primaries for nominating state and national officers.
3. Nation-wide preferential primaries for presidential nominations.
4. Direct election of United States senators, and the short ballot.
5. The initiative, referendum and recall.

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6. "A more easy and expeditious method of amending the federal Constitution."

7. National jurisdiction over "those problems which have expanded beyond the reach of the individual states."

8. "Equal suffrage to men and women alike."

9. Limitation of campaign funds and detailed publicity both before and after primaries and elections.

10. Registration of lobbyists.

11. Publicity of committee hearings, except on foreign affairs, and recording of all votes in committee.

12. Exclusion of federal appointees from political activities.

13. Referendum on court decisions nullifying state legislation.

14. Reforms in legal procedure and methods, with particular reference to injunctions.

15. "An enlarged measure of social and industrial justice," including legislation regarding industrial health and accidents, child labor, wage standards, women's labor, hours and days of labor, convict labor, industrial education, and industrial research.

16. "The organization of the workers, men and women, as a means of protecting their interests and of promoting their progress."

17. A "labor seat in the President's cabinet"; "the development of agricultural credit and cooperation," and agricultural education; information about and correction of high costs of living; consolidated federal health service, without discrimination as to conflicting curative schools.

18. National regulation of interstate corporations through a permanent federal commission; reform of the patent laws.

19. Physical valuation of railroads by the Interstate Commerce Commission and abolition of the Commerce Court.

20. Currency reform and opposition to the Aldrich bill.

21. Extension of foreign commerce by subsidies.

22. Conservation of national resources.

23. Extension of good roads and rural postal delivery; opening of Alaskan resources, not through sale or gift, but "upon liberal terms requiring immediate development"; territorial self-government for Alaska; development of rivers, especially the Mississippi.

24. American ships engaged in coastwise trade to pay no tolls for use of the Panama Canal.

25. A "protective tariff which shall equalize conditions of competition between the United States and foreign countries, both for the farmer and the

manufacturer, and which shall maintain for labor an adequate standard of living."

26. Immediate downward revision of those tariff "schedules wherein duties are shown to be unjust or excessive."

27. A "non-partisan scientific tariff commission" to report "as to the costs of production, efficiency of labor, capitalization, industrial organization and efficiency, and the general competitive position in this country and abroad of industries seeking protection from Congress," as well as to revenue-producing power and the effect on prices and purchasing power; against the Payne-Aldrich bill.

28. Immediate repeal of the Canadian Reciprocity Act.

29. International arbitration in place of war.

30. A national inheritance tax and the national income tax.

31. International agreement for limiting naval forces, and meantime two battleships a year "as the best means of preserving peace"; protection of "the rights of American citizenship at home and abroad"; larger opportunities for "the able-bodied immigrant" and "his native fellow-workers" through "the establishment of industrial standards"; supervision of immigration; Federal pensions for soldiers and sailors.

32. Pensions by the southern states for ex-Confederates and their widows and children.

33. A zone system of parcels post.

34. Enforcement of the civil-service law in letter and spirit; coordination of federal bureaus.

35. Protection of the people by the Government from deceptive investment schemes.

The Progressive Party in the States after the Convention.—Following the adjournment of the convention, the Progressives gave their attention to the completion of their organizations and conventions within the states. In Delaware, on Sept. 11, a full state ticket was nominated by the Progressive party, with George B. Hyson as the candidate for governor. In Wisconsin, also, on Sept. 11, a convention of the Progressive party met at Milwaukee and nominated a full set of Presidential electors. The convention endorsed the policy of having a complete state ticket, which the members of the Progressive party could heartily endorse and support, and the state party committee was authorized to hold a meeting not later

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than Sept. 24, 1912, and if in the judgment of the convention there is by that time no state ticket in the field which the Progressive party can consistently support in whole or in part, the convention was authorized and directed to nominate or complete such a ticket every candidate of which should support the national candidates of the Progressive party. This was designed to give Governor McGovern and his colleagues on the Republican state ticket which had been previously nominated an opportunity to declare their support of the national policies and candidates of the party. Governor McGovern declared himself for Roosevelt, and on Sept. 24 the state central committee of the Progressive party unanimously endorsed Governor McGovern for reelection.

In Maryland, Sept. 11, the Republican convention in session at Baltimore, removed the Roosevelt electors previously nominated and named a state ticket, but many of the delegates to this convention cooperated with the Progressives with a view to naming new Roosevelt electors by petition.

In Ohio a full state ticket was nominated on Sept. 5, at Columbus, with Arthur L. Garford as the candidate for governor. In New York the state Progressive convention at Syracuse nominated a full ticket, with Oscar S. Straus as the candidate for governor. There were nearly 200 women delegates in this convention, though women may not vote in New York.

The California Electoral Difficulty.—In California, on Sept. 3, delegates were elected by direct primaries to the Republican state convention. The Progressive majority in these primaries was overwhelming, appearing in the subsequent state convention to be nearly 90 per cent., the delegates standing 88 to 13, as between Roosevelt and Taft. This state convention, which assembled on Sept. 24, proceeded to name 13 men pledged to Roosevelt as Presidential electors on the Republican ticket. The chairman of the state party committee afterwards announced that these electors would be placed upon the ballot by petition.

if it were found by judicial decision that the Roosevelt electors named at the Republican convention were not the legal list of that party. The same course was open to the Taft Republicans.

The Taft minority in California nominated Taft electors in a second convention, and applied to the Supreme Court for a mandamus to compel the secretary of state to designate the 13 Taft electors for places on the Republican ballot, and to leave off the 13 Roosevelt electors. The court decided (Oct. 3) that under the primary law the Roosevelt electors must go on to the exclusion of the Taft electors, and as the Taft supporters neglected to nominate electors by petition within the time required in case there should be an adverse decision of the court, the names of the Taft electors were not permitted to have a place on the official ballot. As to the legal position of the Progressives in California, Chief Justice Beatty of that state in the mandamus decision, expressed himself as follows:

They have registered as Republicans. They could have renounced their affiliations to the Republican party and have made themselves members of another party; or there could have been another party under that other name, but they did not do that. They remained according to the test prescribed as members of the Republican party. They elected their delegates to the convention, and the convention was regularly held, and it acted according to its notions of political expediency and good faith. And the courts cannot inquire into it; we cannot decide political questions. We can decide only what is legal under the state law.

Electoral Dispute in Kansas.—In Kansas also the Progressive forces controlled the Republican party and nominated electors favorable to Roosevelt. It was submitted to a Republican primary on Aug. 6, whether the Republicans of Kansas would choose Roosevelt electors or Taft electors. The Taft forces resisted this procedure on the ground that no names of electors should be allowed to go on a Republican ticket at a Republican primary, except of such men as would

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pledge themselves to vote for Taft. They brought suit in a Kansas court to prevent Roosevelt electors from being voted for at the party primary. The court refused to interfere, on the ground that if it were a wrong it could be remedied only by political action. The Taft attorneys appealed to the Supreme Court of the United States under the Fourteenth Amendment, and the case was given a special hearing by Justices Pitney and Vandevanter. They re-

fused to interfere, and the primary was held. The Roosevelt electors carried the primaries by a large majority (over 30,000), but these electors subsequently voluntarily withdrew from the Republican column on the ballot, and consented to go on the ballot in another column by petition.

In Missouri a Progressive convention at St. Louis, Sept. 4, named a full state ticket, with Albert D. Norton as candidate for governor.

THE SOCIALIST AND PROHIBITION PARTIES

Socialist Defeat in Milwaukee.—In the city election of April 2, the Socialist party was turned out of power in Milwaukee. This was accomplished by a fusion of the Democratic and the Republican parties. Dr. G. A. Bading, formerly Milwaukee's health commissioner, was selected as the candidate of the "non-partisan" combination, and was carried into office with the votes of the Democrats and Republicans by a majority of 11,000. The Socialists also lost control of the city council. The outcome of this election was heralded all over the country as a serious blow to the Socialists. As a matter of fact, the Socialist vote was greater in this election than it was in 1910.

The Socialist National Convention met in Indianapolis on May 12, and its sessions continued for more than a week. The report of the national secretary, John M. Work, showed the membership of the party, based on the average dues received, to have increased from 15,975 in 1903, to 84,716 in 1911, and to 125,823 for the first three months of 1912. About 300 delegates attended the convention. John M. Work, the national secretary, called the convention to order at 10 a. m. Sunday, May 12. Morris Hillquit, of New York, was made chairman of the convention, and James M. Reilly was elected secretary. Mr. Hillquit declared that "the Socialist party has grown into a political party of the first magnitude," and he asserted that:

be Roosevelt or Taft, whether it be Clark or Wilson, are very subordinate questions which will not in the least affect the welfare, the actual life, of the American people; but whether the Socialist party will again double its vote; whether the Socialist party will show up a million and a half or two million strong, will be an historical fact which will lay the foundation for a new society, for a new life in this country.

Mr. Hillquit referred to the growth of the party during the preceding 11 years since its first convention had been held (also at Indianapolis), and he claimed "that it 'truly, fully, and at all times represented the interests and fought the battles of the working classes, and that labor was more and more coming into its ranks in larger and larger numbers, every year, every month, and every day.'"

The Industrial Workers of the World.—The Socialists, like the other parties, found itself divided into two wings, the radicals and the conservatives. The revolutionary "left" was more aggressive and militant, with a tendency toward the principles represented by the Industrial Workers of the World (see XVII, *Labor*). The leader of this radical wing of the Socialists is William D. Haywood, also a leader in the Industrial Workers of the World, who boldly proclaims his opposition to the law of the State as at present constituted. The "right wing," or conservatives among the Socialists, is disposed to look upon the revolutionary faction as anarchists, while the radicals taunt their conservative comrades as "office-seekers," "intellectuals," and "yellows."

The question of selecting the nominees of the different parties for President of the United States, whether it

The conservatives controlled the

National Convention. The result of the convention under their guidance was a series of compromises on certain controverted policies:

1. What shall be the relation of the party to labor unions? Shall these be supported by Socialists, or antagonized? The party did not take positive ground as between trade unionism and the Industrial Workers of the World, but urged that the party "give moral and material support to the labor organizations in all their defensive or aggressive struggles against capitalist oppression and exploitation, for the protection of the rights of the wage workers." A provision was adopted in the constitution of the party providing for the expulsion from the party of any one "who opposes political action or advocates crime, sabotage, or other methods of violence as a weapon of the working class."

2. What shall be the policy as to the exclusion of Asiatic immigration? This was not directly settled but was left on the basis of the compromise of 1910. This involves exclusion of present Asiatic immigration, but not on the ground of race. It was necessary to agree to exclusion to satisfy the American Federation of Labor, but the reason for exclusion must not be inconsistent with the doctrine of international fraternity, the brotherhood of all workers.

3. The land question was referred back to the party in its primary chapters, but a plank was inserted in the new platform demanding the taxing away of all unearned increment of value in land "held for speculation or exploitation."

4. The question of the party's attitude toward the commission form of city government was compromised by being left to the local societies for future decision. Direct legislation, the recall and partisan primaries which may be associated with commission government, are opposed by some Socialists not only because these democratic reforms are not radical enough, but because of their anticipated effect on the Socialist "machine" or organization. Other Socialists favor the commission form.

The Socialist Platform.—The national platform declared for the collective ownership and democratic management of railroads, wire and wireless telegraphs and telephones, express services, steamboat lines and all other social means of transportation, as also of the banking and currency system; the immediate acquirement by municipalities, states, or the federal Government, of all grain elevators, stock yards, storage warehouses, and other distributing agencies, in order to reduce the present inordinate cost of living; the extension of the public domain to include mines, quarries, oil wells, forests, and water power, the collective ownership of land where practicable, and where impracticable the appropriation by taxation of all land rentals held for speculation or exploitation; Government relief of the unemployed by employment on public works; for an eight-hour day at uniform wages; Government loans to states and cities, without interest, for the purpose of carrying on public works; for the relief of the misery of the workers; shortening the work day and the working week; more effective inspection of workshops, factories, and mines; forbidding the employment of children under 16, and the inter-state transportation of child-labor, and the prohibition of uninspected factories and mines; the abolition of official charity and the institution of state insurance against both invalidity and unemployment.

The political demands of the party included absolute freedom of speech, press, and assembly; a graduated income tax; gradual reduction of all tariff duties; particularly those on the necessities of life; equal suffrage for men and women; the initiative, referendum, and recall; the abolition of the Senate and of the veto power of the President; direct popular election of President and Vice-President; the abolition of "the power usurped by the Supreme Court of the United States to pass upon the constitutionality of the legislation enacted by Congress." national laws to be repealed only by an act of Congress or by a referendum of the people; an easier amending process—by a ma-

majority of the voters in a majority of the states; an immediate reduction of the power of the courts; the abolition of all federal district courts and United States circuit courts, the election of all judges for short terms, state courts to have jurisdiction in all cases arising between citizens of the several states; a convention for the revision of the Constitution of the United States; further measures for general and vocational education, and for the conservation of health.

On this platform the party appealed to the country and placed in nomination (May 17) Eugene V. Debs, of Indiana, for President, and Emil Seidel, formerly Mayor of Milwaukee, for Vice-President. Mr. Debs has been the Socialist candidate for President in the last three elections (1900, 1904, 1908).

The Socialist-Labor Party, nominated for its eighth campaign Arthur E. Reimer for President and August Gillhaus for Vice-President. Its platform remains the abolition of the wage system and the establishment of "industrial self-government of the workers, for the workers, by the workers."

The Prohibition Party held its national nominating convention at Atlantic City, N. J., on July 10-11. The platform demanded "a political party which will administer the government from the standpoint that the alcoholic drink traffic is a crime, not a business; the popular election of United States senators; one Presidential term of six years; uniform marriage and divorce law; equal suffrage for women, court review of post-office decisions; protection of the rights of labor without impairment of the rights of capital; arbitration for international disputes; initiative and referendum; tariff revision by an omni-partisan tariff commission; an elastic currency adequate to industrial needs; abolition of child labor; equitable graduated income and inheritance taxes; conservation of mineral and forest preserves; regulation and control of corporations engaging in inter-State business; greater efficiency and economy in Government service.

The party nominated Eugene W. Chafin, of Arizona, for President and Aaron S. Watkins, of Ohio, for Vice-President.

THE REPUBLICAN CAMPAIGN

Early Defections from the Party.—The Republican party entered the campaign with unprecedented divisions and embarrassments. The party organization in several states, Kansas, California, Minnesota, Iowa, Nebraska, Pennsylvania, was under the control of the Progressives. The electors already nominated in some of these states declared their intention of voting for Mr. Roosevelt if they were elected, and adjustments on a number of electoral tickets had to be made. A number of office holders under the administration resigned to help in organizing the Progressive party, including Herbert Knox Smith, commissioner of corporations; F. W. Bird, appraiser of the port of New York; Wm. P. Luck, collector of the port at New Orleans. Seven electors in Minnesota refused to serve as Taft electors, and five of them resigned to run as Roosevelt electors, and there were electoral resignations in other states. Judge Dillon,

nominated for governor of Ohio by the Republicans, withdrew.

The Organization of the Campaign.

—At the request of Mr. Taft, Mr. Charles D. Hilles, the President's private secretary, assumed the chairmanship of the campaign committee for the Republicans. He had associated with him in the work Senator Penrose, of Pennsylvania; Senator Crane, of Massachusetts; Senator Smoot, of Utah, and others of the "old guard" managers of the party who had been instrumental in nominating Taft at Chicago. The national treasurer was George R. Sheldon.

On July 26 a defense of Mr. Taft's nomination was made in the House of Representatives by Mr. Mondell, of Wyoming, and an elaborate statement was given out from the White House, prepared by the President and his secretary, Mr. Hilles, concerning the contested decisions. These documents may be found in the party literature of the campaign.

The following week (Aug. 5) Mr. Bartholdt, of Missouri, defended the decisions of the Republican National Committee, and attacked Mr. Roosevelt:

He came with treachery in his heart and fully determined to bolt if things went against him. . . . The cry of fraud was premeditated, and the shameless ejaculation "Thieves!" was the battle cry of the new party. There could be no other, for principles and policies were forgotten, and if he himself had been nominated he would have made the race on any old platform, with his frantic followers shouting "Hosanna!"

President Taft in the Campaign.—Formal notification of his nomination was given to Mr. Taft by Senator Root, on Aug. 1, in the East Room of the White House, in the presence of senators, congressmen, cabinet members and heads of bureaus. Senator Root assured the President that his title to the nomination was as clear and unimpeachable as that of any candidate since political conventions began, and that the roll was made up in accord "with the rules of law governing the party, and founded upon justice and common sense." Mr. Taft replied in a long acceptance speech, disapproving many of the tenets of Mr. Roosevelt's followers. He reviewed the progressive record of his administration and of the Republican party, discussed the tariff, trusts, and other problems, and urged the preservation of the Constitution and the institutions of the country. The navy, international arbitration, and the Philippines were other topics discussed. The President expressed "profound gratitude at the victory for the right which was won at Chicago, by which the Republican party was saved for future usefulness."

Mr. Taft did not enter actively into the campaign nor engage in any "stumping" tour, but he found opportunity occasionally to give a message to the country in expression of his views, and for the encouragement of his party. On Aug. 16, he addressed the members of the Maryland Editorial Association. He wished a clear cleavage to be made between Republicans and the bolting

members of the third party. He demanded clean electoral tickets and a fair fight, that the bolters should bear their own name and title and not try to be Republicans too.

We ought to have electors in each state, bearing the emblem of the Republican party, bearing the names of the candidates of that party at the head of the ticket covering the electors who are going to vote for those names. If there are any men on that list who are not going to vote for the men at the head of that ticket, I don't hesitate to say that they are dishonest men.

Vice-President Sherman was notified of his nomination at his home in Utica, Aug. 21. He congratulated the Republicans on the fact that their opponents were divided into two camps, "rivaling each other in their efforts in disturbing the civic and economic order of the country." "The new party thrusts itself forward into the vacuum left by the phantoms of other third parties which have passed into oblivion, and oblivion awaits it too." He spoke of "Dr. Wilson as a pedagogue, not a statesman," with a "mode of thought academic rather than practical."

Mr. Taft spoke again at Columbus, Ohio (Aug. 29), briefly defending his tariff vetoes. On Sept. 25 President Taft made a non-political speech at Altoona, Pa., at a semi-centennial meeting of war governors who had pledged loyalty and support to President Lincoln in the war for the Union. On Thursday, Sept. 26, he spoke at the session of the International Chambers of Commerce at Boston. At Beverly, Mass., President Taft's summer home, he spoke on Sept. 28, attacking the Democratic tariff programme, and the third party. This party, he said, had split off from the Republican party "not for any principle, but merely to gratify personal ambition and vengeance." He attacked the Progressive platform as a "crazy quilt," said the movement would collapse were its candidate removed, and he declared that "fortunately there is not the slightest chance of the success of the third party."

As the campaign drew to a close, Mr. Taft spoke to the country in some published letters. He expressed the hope that the pending contest

would result in a Republican victory, that "the protective policy might remain unchanged, business be undisturbed, and the prosperity that is now on our threshold may not be halted or driven away, and that the lovers of our Constitution, and the institutions of civil liberty preserved therein, may have no cause for alarm from threatened radical changes which would shake the structure of democratic representative constitutional government which our forefathers have so laboriously reared." He warned third party adherents that in a contest between Republicans who believe in protection, and Democrats who seek to tear it down, "the protectionist who votes for a third candidate is giving aid to the enemy, for in effect he votes for the Democrat." He predicted victory for his party:

From all parts of the country assurances are coming that Democrats intend to vote for the Republican candidates and a continuance of prosperous business conditions, and against the programmes of economic confusion and so-

cialistic subversion of our institutions supported by the Democratic candidates and their allies. Democratic workmen refuse to be led from the factory and good wages of 1912 back to the Democratic hard times of 1893-97. They prefer independence and money in the savings bank to loss of employment and dependence on charity.

Hon. John D. Long, ex-Secretary of the Navy, under whom Mr. Roosevelt served as Assistant Secretary, expressed public opposition to Roosevelt, urging objections on account of the third-term issue, Roosevelt's selfish and unfair treatment of Taft, his advocacy of the recall of judicial decision, and because Roosevelt was "a colossal boss actuated by a spirit of self-aggrandizement."

In the last two weeks of the campaign, the Republicans made strenuous efforts to hold their voters in line and to prevent their party and candidate from falling to third place in the race. They appealed to the fear of the country that Democratic success might mean hard times and commercial disaster.

THE DEMOCRATIC CAMPAIGN

The Campaign Committee.—In harmony with the wishes of Governor Wilson, the Democratic campaign was placed in charge of a committee with Wm. F. McCombs as chairman. Mr. McCombs had been the manager of Mr. Wilson's pre-convention campaign, and had given much disinterested and devoted service to the work. The National Democratic Committee acquiesced in the selection by Governor Wilson of the campaign committee made up as follows: William F. McCombs, chairman; Robert S. Hudspeth, of New Jersey; Josephus Daniels, of North Carolina; Willard Saulsbury, of Delaware; Robert Ewing, of Louisiana; A. Mitchell Palmer, of Pennsylvania; Joseph E. Davies, of Wisconsin; Judge W. R. King, of Oregon; Senator Thomas P. Gore, of Oklahoma; Senator James A. O'Gorman, of New York; Senator James A. Reed, of Missouri; Congressman Daniel J. McGillicuddy, of Maine; Congressman Albert S. Burleson, of Texas; William G. McAdoo, of New York. The last six were not members of

the national committee. Rolla Wells, a former Mayor of St. Louis, was made Treasurer of the Democratic Committee. A bureau was established to deal with questions of race and religion, owing to numerous inquiries as to Governor Wilson's opinions about immigrants and the Roman Catholic Church.

Governor Wilson in the Campaign.—Governor Wilson was formally notified of his nomination on Aug. 7, at Sea Girt, N. J. He delivered a formal address in response. On Aug. 15, Governor Wilson spoke to a farmer's picnic in New Jersey, with 2,500 in attendance. He denounced the tariff as an imposition on the farmer, and asserted that business enterprises should stand on their own bottoms and not be propped up by taxes. He thought the tariff was a restrictive tariff that was "choking and hemming in the great unmatched energy of America, that is now waiting for a field greater than America itself in which to prove that Americans can take care of themselves." A few days later, at Tren-

ton, Governor Wilson said that those who were seeking special privileges need not apply to him or to the Democratic party.

At Indianapolis, on Aug. 20, at a public gathering, Alton B. Parker gave formal notification to Governor Marshall of his nomination for Vice-President. In his response, Governor Marshall spoke of the economic injustice of the tariff, of its leading to socialism, and, he said: "If I must choose between the paternalism of the few and the socialism of the many, count me and my house with the throbbing heart of humanity!"

Governor Wilson spoke to an assembly of farmers in Pennsylvania again attacking the tariff and defending the Democratic Free List bill which the President had vetoed. In letters and interviews he explained his attitude toward immigration. He was in favor of "as liberal unrestricted immigration as any man with common sense and with love for America could desire, but was opposed to immigration stimulated in an unnatural way."

Louis D. Brandeis Supports Wilson.—After a conference with the Governor, Louis D. Brandeis advised Progressives to vote for him. Both desired to prevent the monopoly which would grow out of unregulated competition. Mr. Brandeis had appeared as "attorney for the people" in many suits against the abuses of industrial combinations and violations of the anti-trust law, and upon this subject he spoke with influence and authority. Later he advised social and charitable workers in New York, that social reform was to be looked for from the Democratic nominee rather than from the Progressives, in spite of the many excellencies of the Progressive platform. The latter he regarded as threatening to labor unions and as providing negative rather than positive benefits; prohibiting labor for less than a living wage, working under conditions destructive to health, etc. These measures may be a protection for the weak but, said Mr. Brandeis:

What we long for in this republic . . . is not the protection of pro-

hibition, but the opportunity of developing. We need the development that comes from self-help, and I find in the programme of the new party what will necessarily result in the killing of this possibility. We need now the qualities of the statesman more than those of the agitator or warrior. We need the man who is able to listen with open mind.

Mr. Brandeis accepted Governor Wilson as such a statesman and advocated his election.

Wilson and the New Jersey Senatorial Primaries.—In the New Jersey primaries Governor Wilson courageously opposed ex-Senator James Smith, Jr., who had filed a petition announcing his candidacy for the U. S. Senate. Governor Wilson had opposed Mr. Smith's election to the Senate two years before and was now again instrumental in promoting Smith's continued retirement from public life. Smith was a high-tariff advocate. He announced himself as a "Progressive" in the Democratic party, whereupon Governor Wilson "offered him bag and baggage to the Progressive party." Smith was defeated in the New Jersey Democratic primaries by Judge Wm. Hughes, by over 30,000 majority, during the last week in September.

On Sept. 9 Governor Wilson spoke in New York City. He described the Progressives as "men out for their own interests," together with a noble group of men and women who had joined the party because its platform embodies most of the ideas for which they have fought; but he deemed it a bar to progress "to legalize monopoly instead of remedying the evil things done under the mistaken leadership of the regular Republicans." He opposed "a partnership between the great trusts and the federal Government." In this visit to New York, Governor Wilson gave his help in organizing the "Bureau of Health Conservation" which had chosen Dr. Wiley president.

On Sept. 12 Governor Wilson attended the State Fair at Syracuse, New York. He spoke to a large audience, composed mainly of farmers. He discussed the tariff and the high cost of living. Chas. F. Murphy, of Tammany Hall, and Governor Dix, of New York, Murphy's candidate

for renomination, sought to make political capital in their interests from the Governor's presence, but Governor Wilson frustrated this by refusing any sanction to the Murphy-Dix wing of the New York Democrats, and by announcing that his visit was without political significance.

During September Governor Wilson traveled 3,000 miles through the middle West, making 25 speeches in numerous states. He denounced Roosevelt, praised Dr. Wiley, and paid a tribute to "the patriotism, integrity, and honesty of purpose" of Mr. Taft. He again attacked the legalization of monopoly. At Sioux City, on Sept. 17, he warned the people to beware of government by experts. "I have lived with experts all my life and I know that experts don't see anything except what is under their microscope, under their eye. They can't even perceive what is under their nose." He cited the technical and limited inquiry concerning benzoate of soda, and pure food which had been submitted by President Roosevelt to the Referee Board of chemical experts. At Minneapolis and Detroit he attacked the bosses. "You have only to state in public what they are and you put them out of business. A boss isn't a public leader, because parties don't meet in back rooms." At Hoboken, N. J., Sept. 21, in opposing Mr. Smith's election to the Senate, Gov. Wilson said that his opposition was not on account of any personal feeling; that men were not to be chosen because they were likable, because they were fine fellows. He continued:

Many a man bred in the old school of politics is being rejected now, not because he does not hold his convictions honestly, but because he holds convictions from which the country has turned away. We are at a critical juncture in the history of America and at a critical juncture in the history of the Democratic party. There is only one condition upon which the Democratic party can gain the confidence of the nation, and that condition is that it should have itself through and through absolutely committed to a progressive policy.

On Sept. 29, Wilson issued a state-

ment relative to the divisions within the Democratic party in New York in view of the approaching New York state convention. He wished to avoid "even the appearance of doing what I condemn in others, namely, trying to dictate what a great party organization should do, what candidates it should choose, and what platforms it should adopt," but in the name of the party, he demanded an unbossed convention and nominations as free and as good as those of Mr. Straus for the Progressives and Mr. Hedges for the Republicans. In New England he again spoke in opposition to the tariff. He thought it a "fraud" to call it "protective" in the light of the sad conditions in the Lawrence mills (See XVII, *Labor*). He referred to the utterance of President Taft to the effect that if the Democratic party were put in power there would come "a series of rainy days for the industries of the country." Gov. Wilson asked:

What kind of days are those that are enjoyed by some of the employees of the overshadowing steel monopoly, who have to work seven days in the week, twelve hours every one of the seven, and can't, when the 365 weary days are past and a year is told, find their bills paid and their little families properly sustained? Are they waiting for rainy days?

Governor Wilson proclaimed himself a progressive, and urged that America adapt herself to changed conditions and keep pace with other nations. He declared for popular election of U. S. senators, the initiative, and referendum, but opposed the recall of judges.

At Pueblo, Col., on Oct. 7, Governor Wilson charged that the Steel Corporation was "behind the third party programme in regard to the regulation of trusts." He afterwards explained that he meant by this that the trust was behind Mr. Roosevelt with its "thought" and desire rather than with its money. In Lincoln, Neb., Mr. Wilson spoke from the same platform with Mr. Bryan, and at St. Louis and Kansas City, from the same platform with Speaker Clark. Wilson concentrated his attacks on Mr. Roosevelt rather than on Mr. Taft, emphasizing the fact that the Progressive programme for

trust regulation had for its chief supporter Geo. W. Perkins, of the Steel Trust. On Oct. 12, Columbus Day, Governor Wilson made an address in New York, chiefly on the part played in the American population by the Italians, to offset the influence that might result from expressions in his *History of the American People*, in which he had deplored and criticised a certain class of immigrants from southern Europe.

Dr. Eliot Supports Wilson.—Dr. Eliot, president emeritus of Harvard, wrote to the *New York Times* a much-quoted letter advocating the election of Governor Wilson. He said in part:

The coming troublous years will call for fairness, sober judgment and fine resolution on the executive. Governor Wilson's career gives indication that he possesses these qualities. Through thirty years of public life ex-President Roosevelt has proved that these are not his characteristics.

Governor Wilson on the Tariff.—On Oct. 18 Governor Wilson spoke in Pittsburgh defining more explicitly the attitude of his party toward the tariff. He said:

The Democratic party does not propose free trade or anything approaching free trade. It proposes merely a reconsideration of the tariff schedules such as will adjust them to the actual business conditions and interests of the country. Every observant business man must have realized long ago that the tariff schedules were constructed in such a way that business was not upon a normal basis in the United States. They do not constitute a system of well-considered protection. On the contrary, they embody innumerable cunningly devised and carefully concealed special favors; and particular groups of capi-

talists and manufacturers have taken advantage of these special favors to build monopoly up in a way that is threatening and dangerous to every new and independent enterprise. Our field of industry is like an untended garden. Some of the plants have so overshadowed the rest as to give them no chance of light or air. Their roots, moreover, have monopolized the soil, and new growths are all but impossible. If we would have stable prosperity, we must admit light and air and freedom into the whole process of our industrial life, and it is with that object that the Democrats will approach the revision of the tariff. Their desire is not to check, but to aid; not to embarrass, but to quicken. They will not undertake the task like amateurs, either. They will seek and obtain the best possible advice in the country, but they will seek it far and wide, and not only in the quarters from which it has usually come.

Bryan in the Campaign.—Wm. J. Bryan took a vigorous and active part in the Democratic campaign. He denounced Mr. Roosevelt's trust policy as socialistic and said the remedy was worse than the disease. Mr. Bryan opposed Taft for standing still while the people marched by him.

He considers the people incapable of managing their own affairs and has no confidence in them. I will give him credit and say he does not pretend to. Roosevelt, on the other hand, professes great confidence in the people, but this is a sham and he proposes to rule as a despot if he should have his own way.

In the later weeks of the campaign Mr. Bryan entered upon an extended speaking tour for his party and for Governor Wilson. He made strenuous objection to electing Mr. Roosevelt or any one else for a third term.

THE PROGRESSIVE CAMPAIGN

Organization of the Campaign.—Senator Dixon, of Montana, who had managed Mr. Roosevelt's pre-convention campaign, was placed in charge of the Progressive campaign as chairman of the National Committee. The organization of the new party was based on the pattern of the old, with state, congressional, and county committees, and was extended throughout the country as rapidly as

possible. Elon H. Hooker, of New York, was made the national treasurer of the Progressive party, and an appeal was made to "the average citizen throughout the country for subscriptions."

Roosevelt in the Campaign.—Mr. Roosevelt began a series of campaign speeches at Providence, R. I., Aug. 16. He attacked both of the old parties. He referred to the report that

the cotton schedule of the present tariff was written by Mr. Lippitt, a cotton manufacturer and a United States senator from Rhode Island. He asserted that the Democratic platform, if carried out, would prevent the Lippitts from prospering "by the simple process of preventing every one from prospering." The Republican proposal would "give prosperity to the Lippitts and then let it trickle down as they may condescend to permit such trickling." The Progressive policy was to keep the factories open and let the Lippitts prosper, "but to see to it also that they do full justice to the wage workers whom they employ, and to the customers whom they serve."

Mr. Roosevelt also spoke in Boston, and in Vermont the week prior to the state election therein, Sept. 3. On Sept. 2 he went westward for a month's campaigning. He went by a northern route to California, and came back through the southern states, speaking in New Orleans, Atlanta, Raleigh, and other southern cities. In Montana he said that Governor Wilson had been nominated by the bosses; that a majority of the trust magnates in Wall Street were supporting Wilson because they knew he was not hostile to them; that Democratic talk about the tariff was "only a red herring drawn across the trail to divert attention from the work of social readjustment and industrial reform."

On Sept. 9, addressing 5,000 people at Spokane, Wash., he spoke for woman suffrage. Later, in Portland, Ore., where the woman-suffrage amendment was pending before the people, he denounced the traitors to the woman-suffrage cause. In Arizona, Sept. 17, he announced that if elected President he would call an extra session of Congress "to be devoted exclusively to putting into operation the Progressive programme dealing with social and industrial justice." The government should be a "model employer," adopting the principles of workmen's compensation, the minimum wage, and the proper safeguarding of machinery. In Denver, on Sept. 19, he declared for the recall of Presidents for misconduct and inefficiency.

Early in October Mr. Roosevelt visited the south. In Missouri he appealed to the disappointed friends of Speaker Clark by saying that the Baltimore Convention had overridden the will of the people, not only in Missouri, but in every state whose primaries Mr. Clark had carried. The Democratic Convention, like the Republican, had turned down the candidate with the popular preference and had put forward another instead, "in wilful disregard of the desire of the voters." Mr. Roosevelt was received with great enthusiasm in Oklahoma. In Arkansas he spoke for naval enlargement, and suggested the employment of the Panama Canal force for deepening the Mississippi. In New Orleans he appealed for local support by advocating the retention of the duty on sugar. Again he urged the conservation and recovery of the natural resources in land, saying that if he were elected President he would place Colonel Goethals in charge of a reclamation programme on the lower Mississippi that would result in the drainage and recovery of amounts of swamp lands equal in area to the state of Illinois. At Atlanta, Sept. 28, Mr. Roosevelt charged Governor Wilson with making misstatements as to his position. He denied certain positions that had been attributed to him. He closed his tour at Raleigh, North Carolina, Oct. 1, whence he went directly to New York, having traveled upwards of 8,000 miles.

In response to the attacks of the Democratic candidate Mr. Roosevelt referred to Governor Wilson as a "Tory" and said that he had utterly failed to regulate or curb the trusts in his own trust-ridden state of New Jersey. He also attacked Governor Wilson for his attitude toward immigration from southern and eastern Europe. Mr. Roosevelt was invited to address the Knights of Columbus in Chicago on Oct. 12, but the invitation was subsequently withdrawn. At Albany, N. Y., Oct. 7, Mr. Roosevelt denounced the statement of Governor Wilson that the Steel Trust was behind the third-party programme in regard to the regulation of the trusts.

Governor Deneen and Illinois Politics.—The national struggle was complicated by the political situation in Illinois. On Oct. 10 the Deneen faction of the Republican party in that state came out for Taft and against Roosevelt. Deneen had supported Roosevelt in the Chicago convention, half-heartedly, the Progressives suspected. The Governor, being a candidate for reelection, sought to remain neutral with respect to Taft and Roosevelt in the campaign, in the hope that Illinois Republicans, while dividing on their national ticket, might unite on their state ticket. The *Chicago Tribune*, an ardent supporter of Roosevelt, yet supported Deneen for governor. But as the majority of the progressives insisted on a straight fight and a state ticket of their own, Deneen and his Republican colleagues were forced to make a choice. Deneen turned against Roosevelt on the issue of the "stolen delegates." He said:

There were only 34 serious contests in the Chicago convention, and Colonel Roosevelt told me so himself, asking me to modify the resolution which I offered to include only the 34. I did not do so and kept the figure of contests at the number which had been agreed to originally by Governor Hadley and the Roosevelt managers. Those 34 delegates, had they been seated in Colonel Roosevelt's favor, would not have changed the result. He would not have been nominated. He protested against the southern and the territorial delegates, but to my personal knowledge it was Theodore Roosevelt eight years and four years ago who prevented a change in the system of selecting those delegates, a change for which the Illinois delegation voted solidly. Then Colonel Roosevelt demanded that Illinois bolt. I refused to bolt then and I refuse to bolt now. I am for the Republican ticket, and it is my judgment, after a month of active campaigning in Illinois, that the Republican nominees will carry the state.

On Oct. 12 Roosevelt denounced Governor Deneen's statement as absolute falsehood, denied that he had had private dealings with Deneen at Chicago, and attacked him for double dealing in the Chicago convention.

Attempted Assassination of Roosevelt.—On Oct. 14, Mr. Roosevelt was scheduled to speak in Milwaukee.

After dinner at the Gilpatrick Hotel he was taking his place in an automobile with a party of friends to go to the Auditorium for his address. He arose in the automobile to salute the cheering crowd on the street and sidewalk, when one John Shrank raised a .38-calibre revolver and fired at Mr. Roosevelt at close range. Elbert E. Martin, a stenographer and a former football player, threw himself upon the assassin and bore him to the ground, thus preventing his firing a second shot. It was at first thought that Mr. Roosevelt was unwounded, but it was soon found that he was shot in the breast, and it was reported afterwards that the bullet wound was about half an inch above the right nipple. The bullet had been deflected upward and its force reduced by a spectacle case and a 50-page manuscript, otherwise it might have penetrated the lung and inflicted a mortal wound. As it was, it caused a deep and serious flesh wound and fractured a rib. Against the persuasion of his friends Mr. Roosevelt insisted upon going to the Auditorium and delivering his address. When it was announced to the audience that assassination had been attempted and that Mr. Roosevelt was wounded, there was great excitement. The audience listened to Mr. Roosevelt's address with unusual interest and the utmost attention. He held up his manuscript, showing the audience where the bullet had gone through, saying that "it takes more than that to kill a Bull Moose." He spoke for an hour and thirty minutes.

After his address Mr. Roosevelt was taken to Chicago to the Mercy Hospital. There it was found that the wound was more serious than was supposed. There was no probing for the bullet, but anti-tetanus serum was administered to guard against infection. The physicians issued a bulletin to the public announcing that there was "no cough and no bloody expectoration" and that the patient was "in magnificent physical condition due to his regular physical exercise and his habitual abstinence from tobacco and liquor." His improvement was constant and rapid and on Monday, Oct. 21, a

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week after the tragedy, Mr. Roosevelt was taken to New York, and to his home at Oyster Bay. He had received messages of sympathy from Governor and Mrs. Wilson, President Taft, Senator La Follette, Mr. Debs, the Democratic campaign managers, and from many hundreds of friends throughout the world. There was universal sympathy for Roosevelt and indignation on account of the brutal and murderous assault. Governor Wilson decided to cancel as many of his campaign engagements as possible. He wished not to be the only candidate on the stump, and as Mr. Taft was not active in the campaign Governor Wilson wished to retire while Mr. Roosevelt was disabled. William J. Bryan, campaigning for Mr. Wilson in Indiana, said, amid the excitement and sympathy aroused for Mr. Roosevelt, that "the issues of the campaign should not be determined by the act of an assassin." Mr. Roosevelt sent word that there should be no cessation of the Wilson campaign on his account; he asked no quarter. He issued from the hospital in Chicago the following statement:

I wish to express my cordial agreement with the manly and proper statement of Mr. Bryan. . . . I wish to point out, however, that neither I nor my friends have asked that the discussion be turned away from the principles that are involved. On the contrary, we emphatically demand that the discussion be carried on precisely as if I had not been shot. I shall be sorry if Mr. Wilson does not keep on the stump, and I feel that he owes it to himself and the American people to continue on the stump. . . . I cannot too strongly emphasize the fact, upon which Progressives insist, that the welfare of any one man in this fight is wholly immaterial compared to the great and fundamental issues involved in the triumph of the principles for which our cause stands. . . .

So far as my opponents are concerned, whatever could with truth and propriety have been said against me and my cause before I was shot can with equal truth and equal propriety be said against me now, and it should be so said; and the things that cannot be said now are merely the things that ought not to have been said before. This is not a contest about any man; it is a contest concerning principles.

Shrank, the Assailant of Roosevelt.—John Shrank, the assailant of Col. Roosevelt, is 36 years old, a native of northern Bavaria. He came to New York at the age of 16. He was formerly a bartender in his uncle's saloon in New York. He inherited property valued at \$25,000. He had nursed a grievance against Roosevelt ever since the latter, as Police Commissioner, had closed his uncle's saloon in 1895. He had followed Roosevelt for weeks seeking an opportunity to murder him as an enemy to his country's liberties and to save the country from civil war. He said he had a dream revealing to him that Roosevelt, not Czolgosz, was the author of McKinley's assassination, and that McKinley had appeared to him in a vision telling him to avenge his death. Shrank was placed under arrest and held for an examination into his sanity. On Nov. 22 he was declared insane and was committed by Municipal Judge A. C. Backus of Milwaukee to the Wisconsin Northern Hospital for the Insane. Commitment followed the presentation of a report by a commission of five alienists in which the defendant was unanimously adjudged insane, afflicted with "chronic and incurable paranoia."

Progressives Renew the Campaign.—Senator Beveridge filled an immediate engagement for Mr. Roosevelt in Louisville. Through Senator Beveridge Mr. Roosevelt asked Mr. Wilson to answer categorically why it was that after the recommendation of his inaugural address in New Jersey and while insisting that the trust question is a state question, and in view of the fact that he had ample power in New Jersey to deal with the trusts, he had failed, during his term as Governor, to take action of any kind against the Standard Oil, Tobacco, Sugar, or any other trust.

Governor Wilson replied Oct. 17, that the Republican legislature of New Jersey made revision of corporation laws impossible, and no New Jersey official could prosecute or propose dissolution for breach of the federal statutes.

In addition to Mr. Roosevelt many other progressive speakers took the

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platform. Governor Johnson of California, the candidate for Vice-President, Senator Bristow of Kansas, Senator Clapp of Minnesota, ex-Senator Beveridge, candidate for governor in Indiana, ex-Attorney-General Bonaparte, Comptroller Prendergast of New York, Miss Jane Addams, Jacob Riis, ex-Governor Fort and Everett Colby of New Jersey, William Dudley Foulke of Indiana, and Bourke Cockran of New York.

The "Washington Party" in Pennsylvania.—In Pennsylvania the Progressives put their electoral candidates on the ticket under the title "Washington Party," because the term "Progressive" had been preempted by others in the state. The Progressives were in a majority within the Republican party in that state and the majority of the Republican electors nominated previous to the Republican National Convention were Roosevelt men, but the Progressives agreed with the Republicans to substitute Taft electors for the Roosevelt electors on the Republican ticket, and to put their candidates under the new title "Washington Party." Before this was done the Republicans had organized under the name "Lincoln Party" in order to have Taft electors in the field, but when the Roosevelt electors withdrew from the Republican ticket the "Lincoln Party" withdrew its ticket.

Republican Anti-Roosevelt Progressives.—A group of Progressive Republican leaders refused to break with the old party and join the Progressives. Senator Works of California refused to support either Taft or Roosevelt and thought it consistent with his principles to vote for Wilson. Senator Cummins of Iowa, who had been a candidate before the Republican convention, announced continued allegiance to the old party, though he expected to vote for Roosevelt. Senator Cummins advised that any Republican who concluded from the evidence that Taft's nomination was tainted should feel free to vote in a way most effectively to rebuke his party managers for the abuse of their trust. For himself he felt that Taft was not progressive and had been nominated by

a minority through questionable methods. Senator Borah of Idaho refused to support Taft nor would he give his adherence to the new party. He would advocate progressive principles and seek his own reelection.

Hadley Adheres to Taft.—Governor Hadley of Missouri, after weeks of hesitation, announced his adherence to Taft and the Republicans. He was one of the seven governors who had urged Roosevelt to be a candidate. He spoke for the Republicans at St. Louis Sept. 28 saying that there are only two candidates before the American people, Taft and Wilson. "Of these I prefer Taft. While there were some conditions surrounding the Chicago convention of which I did not approve, I believe Taft will be the best man to solve them."

La Follette's Attacks on Roosevelt.—Senator La Follette, of Wisconsin, manifested bitter personal hostility to Mr. Roosevelt. He would not endorse Taft nor approve the work of the Republican convention, but while he supported Mr. McGovern, the Republican nominee for governor of his state, he was understood to be throwing his influence privately to the Democratic candidate for President. He made some speeches in the West for local progressive candidates on the Republican ticket. In *La Follette's Magazine* he repeatedly attacked Roosevelt during the campaign. He charged that the ex-President was backed by the stock-watering operations of the Steel Trust and the Harvester Trust; that he had organized fake contests before the convention to secure his own nomination; that he refused aid in making a progressive platform, and that his being "bound to have the nomination or to destroy the Republican party was a most striking example of misdirected power and unworthy ambition."

He could have caused the nomination of Hadley on a strong Progressive platform, but he would have no one but himself. He was there to force his own nomination or smash the convention. He was not there to preserve the integrity of the Republican party and

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make it an instrument for the promotion of progressive principles and the restoration of government to the people. He gagged his followers in the convention without putting on record any facts upon which the public could base a definite, intelligent judgment regarding the validity of Taft's nomination. He clamored loudly for purging the convention roll of tainted delegates, without purging his own candidacy of his tainted contests and his tainted trust support. He offered no reason for a third party except his own overwhelming craving for a third term.

In the Senate (Aug. 17) Mr. La Follette again announced his unswerving allegiance to the Republican party and again bitterly attacked Mr. Roosevelt, during whose administration, according to La Follette, the trusts were increased in number from 149 to 1,020.

Mr. Roosevelt, in his campaign, took notice of La Follette's opposition, which he regarded as personal. He affirmed that he (Roosevelt) had commended and supported La Follette's progressive policies in Wisconsin in the years gone by, and he expressed regret that La Follette had seen fit, from personal disappoint-

ment because of the failure of his own candidacy, to pursue a factional course in opposition to the overwhelming body of Progressives. The supporters of Roosevelt recalled the comment of *La Follette's Magazine* upon Roosevelt's retirement from the Presidency in March, 1909. It commended the ex-President for the three great accomplishments of his administration, the Panama Canal, making peace between Russia and Japan, and sending the fleet around the world. But it commended him more highly for "impressing on the American mind the one great truth of economic justice, couched in the pithy phrase, 'the square deal;' for 'making reform respectable in a commercialized world,' for the movement 'for the conservation of our national resources into which Roosevelt had thrown himself so energetically at a time when the nation knew not toward what ruin and bankruptcy it was approaching.'" Thus the Progressives sought to break the force of La Follette's criticism, and to show how Roosevelt had been long recognized as the foremost leader of the Progressive cause.

THE CLOSING DAYS OF THE CAMPAIGN

During the week prior to the election the several candidates renewed their appeals to the public. Mr. Taft spoke in letters that were given to the press. He emphasized the danger to material prosperity, which he said would be menaced by Democratic success. The election of the Democratic candidate would be a leap in the dark. He assured the farmers that the removal of the duty on sugar would ruin the domestic beet-sugar industry. The third party did not hope for success, but most of them were so filled with hatred for the Republican party because it refused to accept their dictation that they are willing to bring disaster upon the whole country simply to gratify their revenge.

Governor Wilson assured the public that Republican talk about panic and hard times destined to follow a Democratic victory was "a childish bluff," and Chairman McCombs an-

nounced that Governor Wilson was not in favor of free trade, but was for readjusting the tariff in the interest of the people.

Mr. Bryan and Senator La Follette renewed their attacks on Roosevelt.

On Oct. 30 Mr. Roosevelt addressed a monster gathering in Madison Square Garden in New York. There was a demonstration of cheering and enthusiasm by a vast audience which lasted for over 40 minutes. The next evening at Madison Square Garden a demonstration in honor of Governor Wilson lasted for over an hour. Mr. Roosevelt's last campaign message was that the Progressive party had won a moral victory, whatever the result of the balloting might be.

The Progressive party has been founded and put upon a lasting basis. The old boss-controlled Republican organization is a thing of the past, and the dream of the people for social justice, and a return of their Government

into their own hands, has been formulated into a party programme and an organization which will carry on the fight until it is won. It is immaterial what part I play. If I am able to serve, that is sufficient. If another can serve better, that is equally satisfactory. The main thing is for the movement to go forward to definite results.

The managers of each of the three leading parties made preëlection predictions of the success of their respective candidates.

Death of Vice-President Sherman.

—After a long illness James Schoolcraft Sherman, Vice-President of the United States, died at his home in Utica, New York, at 9:42 p. m., on Oct. 30, of uremic poison caused by Bright's disease.

Mr. Sherman had played an important part in Republican politics both in New York state and in the nation, always as an active, "rock-ribbed," regular Republican. He was born in Utica, N. Y., Oct. 24, 1855, was graduated from Hamilton College in 1878, studied law, and was admitted to the bar in 1880. He at once entered politics and was elected Mayor of Utica in 1884. In 1886 he was elected to Congress, and with the exception of one term he remained in the House till he was

elected Vice-President in 1908. He had charge of the Republican congressional campaign in 1906. In 1910 he was defeated for chairman of the New York State Republican convention by Theodore Roosevelt. In Congress he was a friend of Speaker Thomas B. Reed, and a close ally of Speaker Cannon, and he was recognized as one of the reliable conservatives of the House. His most important work in Congress was done as chairman of the Committee on Indian Affairs of the House. Among Republicans he had the distinction of being the only Vice-President ever renominated by his party for a second term, and he was the first national candidate to die between his nomination and the date set for election. He was the seventh Vice-President to die in office. His death leaves the office of Vice-President vacant till March 4, 1913. The duty of presiding over the Senate will devolve upon whomever the Senate may select as president *pro tempore*. The Republican National Committee did not designate any one to take Mr. Sherman's place on the Presidential ticket, and the eight electors of Utah and Vermont carried by his party were left free to vote for whom they choose.

THE ELECTIONS

Early State Elections.—The state election was held in Vermont on Sept. 3. There were five parties with state tickets in the field. The week before the election Mr. Roosevelt made a vigorous "whirlwind campaign" in the state. Unofficial returns show the following vote on governor, which is here compared with that of two years ago:

	1912.	1910.
Allen M. Fletcher (Rep.)	26,259	35,263
Harlan B. Howe (Dem.)	20,350	17,425
Frazer Metzger (Prog.)	15,800	....
Clement F. Smith (Prohlib.)	1,443	1,044
Fred W. Sultor (Soc.)	1,181	1,055

This is the largest Democratic vote since 1880, and showed a Democratic gain of 4,397 over the vote of 1908, which indicated that the new party had drawn its vote almost entirely from the Republicans. As no can-

didate received a majority, the governor will be chosen by the legislature, which insures the election of Mr. Fletcher, Republican. The Progressives claimed to have elected 50 members of the lower house out of a membership of 246.

The state election in Maine was held on Sept. 9. The Progressive party had no state ticket in Maine. The Progressive Republicans had controlled the party organization and convention in that state and had nominated a state ticket while sending Roosevelt delegates to Chicago. They and the regular Republicans cooperated in the support of a state ticket headed by William T. Haines for governor. Out of a total vote of 142,000 the united Republicans had a majority of about 4,000. Wm. T. Haines, the Republican candidate, received 70,928 votes,

against 67,905 for Frederick W. Plaisted, the Democratic candidate. Governor-elect Haines sought to maintain a neutral attitude as between the "regulars" and the "progressives," though he was claimed as a supporter of Roosevelt. The Republicans carried a small majority in both branches of the legislature, and thereby gained a seat in the U. S. Senate, replacing Obadiah Gardner, the present Democratic senator. Chairman Hilles of the Republican National Committee said the result in Maine "proved the utter folly of a third party entering the race."

The Vote for Presidential Electors.—The result of the election of Nov. 5 was a sweeping Democratic victory, not by majorities but by pluralities in so many states as to give that party's candidate the largest vote and the largest majority in the Electoral College ever given to a party candidate. There are 531 electoral votes, a majority (or 266) being required for an election. President Taft carried two states, Vermont (by a very meagre plurality) and Utah. Each of these two states casts four votes, giving Mr. Taft but eight votes in the College. Mr. Roosevelt carried five states, Pennsylvania, Michigan, Minnesota, South Dakota and Washington, and received 11 of the 13 electoral votes of California, making 88 votes in all. Roosevelt carried California by 174 on the highest elector, but two of his electors fell short of a plurality. Governor Wilson carried all the other 41 states and two votes in California and will receive 435 electoral votes, or 169 more than the necessary majority. (See table "Vote for President," in Department V.)

In the following states Roosevelt came second in the popular voting: Alabama, Arizona, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Mississippi, Montana, Nebraska, Nevada, New Jersey, North Carolina, North Dakota, Oregon, South Carolina, Vermont, West Virginia. The Progressives ran third in 18 states.

Taft came second in the following states: Arkansas, Connecticut, Delaware, Idaho, Kentucky, Massachusetts, Michigan, Missouri, New

Hampshire, New Mexico, New York, Ohio, Oklahoma (there were no Roosevelt electors on the ballot in Oklahoma), Rhode Island, Tennessee, Texas, Virginia, Wisconsin, Wyoming, making 19 states. The Republicans ran third in 25 states, and fourth in one, Nevada, where they were beaten by the Socialists.

Wilson came second in California, Minnesota, Pennsylvania, South Dakota, Utah, Washington. The Democrats ran third in Michigan and Vermont.

The popular vote was as follows: Wilson, 6,290,818; Roosevelt, 4,123,206; Taft, 3,484,529; Debs (Socialist), 898,296; Chafin (Prohibitionist), 207,965; Reimer (Socialist-Labor), 29,071.

An examination of the election returns reveals certain significant features. While Governor Wilson has a popular plurality of more than 2,160,000 over his nearest competitor (Roosevelt), yet by combining the votes of the other candidates there is found a popular majority against Wilson of very close to 2,460,000 votes. The combined vote for Taft and Roosevelt would make a majority of 1,316,927 against Wilson. Wilson falls 177,128 votes short of the Bryan vote of 1896, and 118,288 short of the Bryan vote of 1908. It is known that many Independents, Anti-Bryan Democrats and Republicans voted for Mr. Wilson, and it is therefore obvious that very many former Bryan Democrats must have voted for Roosevelt or for Debs, or refrained from voting. In no state outside of the South did Governor Wilson receive a majority over the combined vote of Roosevelt and Taft. For instance, in New York Wilson's plurality against Taft, his nearest competitor, was over 200,000, while the combined Taft-Roosevelt vote would make a majority of more than 189,000 over the Wilson vote. This is true of many other states wherein the Wilson plurality was large. From these facts it appears that the returns do not indicate a decisive vote of popular confidence in the Democratic party, though that party carried all but eight states. On the other hand, the combined vote of Taft and Roosevelt fell short by 71,271 votes of the

Taft vote in 1908, another indication that there was a large stay-at-home, or absentee, vote.

These figures are not to be taken as indicating that Governor Wilson would have been defeated if either Taft or Roosevelt had not been in the running. In that case Wilson's election would probably have been even more decisive and overwhelming, since most of the followers of either Taft or Roosevelt would have voted for Wilson as against the other Republican rival.

Democratic Majority in House of Representatives.—The Democrats elected a majority of 147 members in the House of Representatives out of a total membership of 435. According to a list prepared in the office of the clerk of the House on Dec. 7 (see V, *The Sixty-third Congress*), the political complexion of the next House will be: Democrats, 291; Republicans, 144. The Republican strength includes the Progressives, of whom no returns are made. A number of the noted Republican leaders of the "Old Guard" failed of reelection—ex-Speaker Joseph G. Cannon and William B. McKinley, of Illinois, Mr. Crumpacker, of Indiana, Mr. Currier and Mr. Sulloway, of New Hampshire, and Mr. Hill, of Connecticut.

Democrats Control the Senate.—Another result of the election will be that the control of the United States Senate will pass to the Democrats. Deadlocks in senatorial elections are possible in two states, Illinois, which has two senators to elect (one to take the place of Lorimer, unseated), and Tennessee which has one. This will leave 93 senators to take their seats after March 4, 1913. Forty-eight will be Democrats, 43 Republicans and two Progressives. If two Republicans are elected from Illinois and a Democrat from Tennessee, the Democrats would still have a majority of one over a combination of Republicans and Progressives in the Senate. In case of a tie Vice-President Marshall would have the deciding vote. This estimate is based on the probability that New Hampshire and Maine will elect Democratic senators, though this is by no means assured. The Progressives hold the balance of power in

both these states. Tennessee is likely to elect a Democrat. In Illinois, owing to the feud between Progressives and Republicans, at least one Democrat is likely to be elected. (See V, *The Sixty-third Congress*.)

Governors were elected in 35 states and in 21 of these elections the Democrats were successful. In New York, Ohio, Indiana, and Illinois Democratic governors were elected by large pluralities. In Wisconsin and Minnesota, however, the Republican candidates for governor were elected, though the party was second in Wisconsin and third in Minnesota in its national ticket. Many Progressives supported the state and local tickets of the Republicans. (See VI, *State and Territorial Government*.)

Commenting upon the election, Governor Wilson said:

The result fills me with the hope that the thoughtful progressive forces of the nation may now at last unite to give the country freedom of enterprise and a government released from all corporate and private influences, devoted to justice and progress. There is absolutely nothing for the honest and enlightened business men of the country to fear. No man whose business is conducted without violation of the rights of free competition and without such private understandings and secret alliances as violate the principle of our law and the policy of all wholesome commerce and enterprise need fear either interference or embarrassment from the Administration. Our hope and purpose is now to bring all the free forces of the nation into active and intelligent co-operation and to give to our prosperity a freshness and spirit and a confidence such as it has not had in our time.

Mr. Taft regarded the vote for Roosevelt and Debs as a warning that the radical propaganda in favor of fundamental changes in our constitutional representative government was threatening and formidable. He urged Republicans to rally around the party standard and to reorganize for the future. He said:

We must make clear to the young men of the country, who have been weaned away from sound principles of government by promise of reforms impossible of accomplishment by mere legislation that patriotism and common sense require them to return to

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the support of our Constitution. Without compromising our principles we must convince and win back former Republicans and we must reinforce our ranks with Constitution-loving Democrats. We favor every step of progress toward more perfect equality of opportunity and the ridding society of injustice. But we know that all progress worth making is possible with our present form of government and that to sacrifice that which is of the highest value in our governmental structure for undefined and impossible reform is the wildest folly. We must face the danger with a clear knowledge of what it is.

Mr. Roosevelt accepted the result with "good humor and contentment." He said:

As for the Progressive cause I can only repeat what I have already so many times said: The fate of the leader for the time being is of little consequence, but the cause itself must in the end triumph, for its triumph is essential to the well-being of the American people. . . . So far from being over, the battle has just begun.

Thomas Woodrow Wilson, twenty-eighth President of the United States, was born at Staunton, Va., Dec. 28, 1856. He was graduated from Princeton University with the degree of A. B. in 1879 and A. M. in 1882. In 1882, also, he received the degree of LL. B. from the University of Virginia, and began the practice of law at Atlanta, Ga. In 1883, however, he abandoned the bar for further study, which resulted in his admission to the degree of Ph. D. by Johns Hopkins University in 1886. From 1885 to 1888 Dr. Wilson was associate professor of history and political economy in Bryn Mawr College, and from 1888 to 1890 he was professor of the same subjects in Wesleyan University. In 1890 Dr. Wilson joined the staff of Princeton University as professor of jurisprudence and politics, and on Aug. 1, 1902, was made president of the university. He resigned Oct. 20, 1910, having become a candidate for the office of governor of New Jersey, to which he was elected the following month, by a Democratic majority of 50,000, for the term Jan. 17, 1911, to Jan. 14, 1914. Governor Wilson was the first Democrat elected gov-

ernor of New Jersey in 16 years. A Democratic House was elected with him but the Senate remained Republican. Nevertheless, Governor Wilson was able to secure, during the session of 1911, a large amount of important legislation (see AMERICAN YEAR BOOK, 1911), including a rigid corrupt-practices act; the establishment of the direct primary for all elective offices, including those of U. S. senator and delegate to national nominating conventions; the establishment of state control of all public-service corporations; and a workmen's compensation act.

In the state campaign of 1911 Governor Wilson took an active part, but was unsuccessful in his effort to secure the election of a Democratic legislature. The Republicans won control of the House and also a majority on joint ballot. The legislation of 1912 was comparatively unimportant.

Thomas Riley Marshall, Vice-President-elect, was born at New Manchester, Ind., March 14, 1854. He was graduated from Wabash College in 1873, and two years later was admitted to the bar. Mr. Marshall practiced law from 1875 to 1909 at Columbia City, which is still his home. In 1908 he was elected governor of Indiana by a Democratic majority of about 15,000; at the same election the state gave a majority of over 10,000 to Republican electors. During Governor Marshall's first term, the Indiana Senate was Republican, but at the election of 1910, at which Governor Marshall was reelected, a legislature Democratic in both branches was returned. The legislation enacted under Governor Marshall's inspiration, at the regular biennial session of 1911, included: Ratification of the income-tax amendment to the federal Constitution; a resolution for the popular election of United States senators; a corrupt-practices and campaign-contribution publicity statute; an employers'-liability law on liberal lines, abolishing workman's waiver and the fellow-servant rule; a bill authorizing the railroad commission to fix rates; child labor laws; cold-storage limitation; standardization of weights and measures; provision

for sanitary inspection of school-houses; provision for industrial inspection for safety of factories, mines, and railroads; a law making block signals obligatory on all steam and electric railways; and a bill for making uniform the accounting of all public offices in the state.

Extra Session of the New Congress.—President-elect Wilson left for Bermuda for a month's vacation Nov. 16. On the eve of his departure he announced that he would call Congress in extra session not later than April 15. He said:

I shall do this not only because I think the pledges of the party ought to be redeemed as promptly as possible, but also because I know it to be in the interest of business that all uncertainty as to what the particular items of tariff revision are to be should be removed as soon as possible.

Campaign Funds.—Each of the national party committees was required by the new federal Corrupt Practices Act to make public a statement of the funds used in the campaign, their extent and their sources, with the number and names of the party's financial supporters.

The statement of the Republican Committee filed with the Clerk of the House of Representatives showed that it had received a fund of \$904,828 and that \$900,363 was spent in the campaign. The largest contributor to the Republican fund was Charles P. Taft, a brother of the President, who gave \$150,000. Francis L. Leland, of New York, gave \$50,000, and J. P. Morgan and Andrew Carnegie each gave \$25,000. There were many contributions of \$10,000. The expenditures were for speakers, salaries, advertising, rent, and other purposes, including \$75,000

to the American Association of Foreign Newspapers. The Republican treasury shows an unexpended balance of about \$5,000.

The Democratic statement showed receipts of \$1,159,446 for the party campaign fund. There were 89,854 donors on the list, all but 1,625 of the gifts being for less than \$100. Charles R. Crane, of Chicago, was the heaviest contributor, with \$40,000 to his credit. He was closely followed by Cleveland H. Dodge, of New York, who gave \$35,000. Though there were many subscriptions above \$10,000 from wealthy men, the large number of subscribers with small subscriptions showed the popular source of Governor Wilson's financial backing. The Democratic Committee has about \$25,000 remaining in the party treasury.

The report of the Progressive party for its national campaign showed receipts amounting to \$678,672.73 and disbursements of \$668,500. While many party members paid small sums for the party cause, large sums were given to the Progressive committee by George W. Perkins (\$130,000), Frank A. Munsey (\$101,250), and Douglas Robinson (\$51,250). There was a balance of \$11,000 in the party treasury.

The total on account of the three leading candidates for the Presidency was \$2,740,956; on account of candidates for the Senate, \$110,000; on account of candidates for the House, \$1,334,955. In the pre-convention campaign, among the three Republican candidates, Taft, Roosevelt, and La Follette, there was expended \$791,684; among the four Democratic candidates, Wilson, Harmon, Clark, and Underwood, there was an expenditure of \$441,626, making a total of \$1,233,310.

THE WORK OF CONGRESS

The second (first regular) session of the Sixty-second Congress began Dec. 4, 1911, and continued till Aug. 26, 1912, the longest session in 30 years. The Senate was Republican, the House Democratic. Since the important legislative results of the session are considered under various departments of the YEAR BOOK, only a general summary of the work of

Congress is attempted here, together with a presentation of certain subjects of Congressional action not elsewhere considered. (For brief summary of legislation with references to more extended discussion, see V, *The Sixty-second Congress*.)

Organization of the House.—It is important to notice, in the first place, that the House continued its

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modified organization and its new methods for the direction of its affairs, in answer to the public demand for a more popular control of legislation. Instead of electing a speaker and then empowering him to appoint the committees (thus giving him almost autocratic control of legislation), it withholds from the speaker the power of appointment and confers the selection of the committees on the House itself, that is to say, on the caucus of the dominant party in the House through its Committee on Committees, as each party is allowed to select its share of each committee.

Tendencies of Legislation.—It was the purpose of the leadership in the Democratic House to direct legislation on three main lines: (1) to lower the tariff and thereby, as was claimed, to reduce the cost of living; (2) to establish the publicity of campaign funds and political activities, including the ownership of the newspaper "organs of public opinion," and thereby eliminate many abuses from political life; and (3) to seek to bring about better and more humane conditions for the working people of the nation.

The Tariff.—The tariff measures passed in the House and, by a combination of Democrats and Progressives, in the Senate, and vetoed by President Taft, are considered elsewhere (see XIV, *Public Finance*).

Government and Political Conditions.—Three bills in the interest of popular government and improved political conditions were passed by both houses and were approved by the President: (1) a constitutional amendment providing for popular election of United States senators (see II, *Popular Government and Current Politics*); (2) an act requiring full publicity of the sources of all campaign funds used by party committees and of the election expenses of individual candidates (*ibid.*); (3) an act to compel newspapers to disclose their ownership in order that influences and interests that might determine the policy of the paper may be known to the public (see XXXIII, *Journalism*). The latter law was finally incorporated in the Post Office Appropriation bill.

Industrial Conditions.—The improvement of industrial conditions was sought by the passage of several acts in the interest of working men and women. An Industrial Commission was created charged with the duty of inquiring into conditions among the working classes and of proposing remedial legislation (see XVII, *Labor Legislation*). A Children's Bureau was authorized (see XXII, *Prevention, Correction, and Charity*), and a prohibitive tax was placed upon the manufacture of white sulphur matches (see XIV, *Public Finance*).

The Commerce Court.—On May 10, the House passed a bill abolishing the Commerce Court. On June 7, the Supreme Court handed down a decision which affirmed that the powers of the Commerce Court are limited to questions of law and that it has no power of reviewing the decisions of the Interstate Commerce Commission on questions of fact. On June 12 the Senate by a vote of 29 to 22 (6 Republicans voting with 23 Democrats for the measure) proposed the following amendment to the House bill abolishing the Commerce Court:

So much of the Act of 1910 creating the Commerce Court, and so much of section 9 of the General Judiciary Act of 1911 with reference to the Commerce Court which provides for five additional Circuit Court judgeships, are hereby repealed together with so much of said acts as authorized the President to appoint five additional circuit judges, and the number of Circuit Judges is hereby reduced to 29.

The bill so amended was passed by both houses but was vetoed by the President and killed.

In the closing days of the session President Taft vetoed the Legislative, Executive and Judicial Appropriation bill a second time because Congress insisted upon inserting provisions that practically abolished the Commerce Court,—the Congress thus seeking to do by a "rider" what it could not do directly over the Presidential veto. The veto was overridden in the House but was sustained in the Senate. Provision was then made in the Appropriation bill for keeping the Court alive till March 3, 1913,

and as thus provided it was signed by the President. No provision for the support of the Commerce Court was made in the Legislative, Executive and Judicial Appropriation bill introduced Dec. 4. (See also IX, *Law and Jurisprudence*.)

La Follette's "Gateway" Amendment.—Senator La Follette, of Wisconsin, introduced a joint resolution in the Senate on Aug. 6 for a "gateway" amendment to the Constitution of the United States, an amendment, that is, that will make all future amendments easier. This proposal is promoted by the belief that it is now too slow and difficult to amend the Constitution of the United States. The "gateway" amendment proposes, instead of requiring a two-thirds vote of both houses of Congress and a ratification by the legislatures of three-fourths of the states, according to the usual amending process, that an article shall become a part of the Constitution providing in substance as follows: A majority of Congress may submit amendments to the states and a majority of the states together with a majority of all the voting people of the United States may secure their adoption. If a majority of Congress are not disposed to take the initiative in submitting an amendment, the favorable action of ten states, either by legislative or popular action, may require its submission.

Investigation of Senatorial Elections: Senator Stephenson, of Wisconsin.—Charges were made against Senator Stephenson, of Wisconsin, to the effect that he had made corrupt use of money in securing his election to the Senate. Stephenson admitted that he had spent over \$107,000 in his campaign, but denied that any of this money was illegally used. The Senate Committee on Elections investigated the matter, and on March 27 the Senate, by a vote of 40 to 34, exonerated Mr. Stephenson of all complicity in corruption in his election and he was allowed to retain his seat.

Senator Lorimer of Illinois.—On July 13, by a vote of 55 to 28, the United States Senate decided that William Lorimer, of Illinois, had no title to the seat in the Senate which

he had occupied for more than two years. It was on May 26, 1909, that the Illinois legislature had declared him elected. The Senate now declared that his election had been brought about by corrupt practices and was void. The resolution ousting Lorimer was as follows:

Resolved, That corrupt methods and practices were employed in the election of William Lorimer to the Senate of the United States from the State of Illinois and that his election was therefore invalid.

Lorimer's election had been effected in a Republican Legislature by a combination of 55 Republican and 53 Democratic votes. Charges of bribery brought about an investigation by a special committee of the United States Senate (see *AMERICAN YEAR BOOK*, 1911, p. 63). This committee, with Senator Burrows of Michigan as chairman, reported in favor of Lorimer's retaining his seat. A minority report, however, took the ground that there was sufficient evidence of corruption to invalidate the election, though Senator Lorimer's connivance was not proven. The majority report was adopted in the Senate by a vote of 46 to 40, March 1, 1911.

The Illinois Senate, by a vote of 39 to 10, in May, 1911, formally charged that Lorimer's election had been secured corruptly. The United States Senate thereupon, June 1, 1911, voted unanimously for a new investigation. This was conducted by the regular committee on privileges and elections, which again decided by a vote of 5 to 3 (March 28, 1912) that in the absence of proof of his own culpability Mr. Lorimer was entitled to his seat. But the minority members of this committee reported the resolution as quoted above, and it was found that the majority of the Senate were not disposed again to sustain Lorimer. On a verdict vote, 26 Republicans and 29 Democrats voted to unseat Lorimer and 20 Republicans and eight Democrats voted in his favor.

It is fair to point out that the minority resolution displacing Lorimer was framed to avoid the charge of complicity on Mr. Lorimer's part in the "corrupt methods."

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Mr. Lorimer spoke twelve hours in his own defense. He denounced those who opposed him, especially Mr. Roosevelt and the Chicago newspapers that had procured and published the testimony on which the proceedings were based.

Mr. Taft, as shown in a published letter he had written to Mr. Roosevelt, made public after the Taft-Roosevelt breach occurred, had urged certain senators to study the Lorimer record carefully as he believed it presented proof of corruption. On account of this, two days after the unseating of Lorimer (July 15) the Senate, led by Senator Bailey, resolved that:

Any attempt on the part of a president of the United States to exercise the powers and influence of his great office for the purpose of controlling the vote of any senator upon a question involving the right to a seat in the senate or any other matter within the exclusive jurisdiction of the senate would violate the spirit, if not the letter, of the constitution, and invade the rights of the senate.

Impeachment of Judge Hanford.—Proceedings looking to the impeachment of Judge Cornelius H. Hanford, of Seattle, U. S. District Judge of the Western District of Washington, were initiated by the Socialist member in the House, Victor Berger, of Wisconsin. The resolution calling for an inquiry charged Judge Hanford with "a long series of corrupt and unlawful decisions," including the cancelation of a citizen's naturalization papers on the sole ground that the citizen was a Socialist. The Congressional inquiry began at Seattle, June 27, but before the final decision was reached, Judge Hanford resigned and his resignation was accepted by President Taft, Aug. 5. This brought the proceedings to a close.

Impeachment of Judge Archbald.—On July 8, 13 articles of impeachment were presented to the House of Representatives against Judge Robert W. Archbald of the Commerce Court, by a unanimous vote of the Judiciary Committee. On July 11 the House, by a vote of 220 to 1, resolved upon impeachment, the one dissenting member being John R. Farr, who

represents Judge Archbald's district. The charges assert that Archbald while he was United States district judge accepted money and obtained credit from persons who were interested in litigation before his court, and that while judge of the Commerce Court he tried to influence railway companies and coal companies controlled by the railway companies to enter into contracts with men associated with him from which he would profit. This was done while these corporations were parties to litigation pending in the Commerce Court. Judge Archbald's name did not appear on the face of these contracts, but it is alleged that he was pecuniarily interested in them; and while the public did not know of his interest the officials of the interested corporations did know.

The House managers for the impeachment were Chairman Clayton and six other members of the Judiciary Committee. The case was left pending before the Senate when Congress adjourned in August. On Dec. 3 the Senate convened as a trial court. Archbald appeared before the High Court to answer the charges of "high crimes and misdemeanors." His chief counsel, A. S. Worthington, declared the House had brought proceedings upon facts that if properly analyzed would show the jurists motives to be unquestionable, and that the charges were vague and indefinite; and it was proposed also to rest the defense on the ground that the charges were not indictable at law. The Senate proceeded to hear witnesses in the case. The House managers for the prosecution had closed their case and the defense was proceeding when the Senate adjourned on Dec. 19, to reconvene Jan. 3, 1913.

New Mexico and Arizona.—Two new states were added to the Union during 1912, New Mexico, by the President's proclamation of Jan. 6, and Arizona, by his proclamation of Feb. 14. The formal admission of Arizona makes the forty-eighth state, and places under state governments all the contiguous continental territory of the United States. By the date of her admission Arizona became known as the "Valentine State." Her first Governor was inaugurated

on Feb. 14, after telegraphic notice had been received of the President's proclamation of admission. Arizona had been barred from statehood in 1911 by the veto of President Taft who objected to the clause in her proposed constitution providing for the recall of judges, and the people of Arizona were required to rescind this provision of their Constitution before their state was accepted (see AMERICAN YEAR BOOK, 1911, p. 262). Governor Hunt in his inaugural address promised to give the state a "golden rule" administration, recommended an anti-lobbying measure and an amendment to the constitution restoring the provision for recalling judges by popular vote. The latter provision has been inserted into the new state's constitution by vote of the people on Nov. 5.

Investigation of the U. S. Steel Corporation.—The committee of the House, headed by A. O. Stanley, of Kentucky, appointed in 1911 to investigate the U. S. Steel Corporation (see AMERICAN YEAR BOOK, 1911, p. 60), presented a voluminous report on Aug. 2. The nine members of the committee divided on party lines. The five Democratic members presented a majority report bitterly hostile to the Steel Corporation, denouncing the absorption of the Tennessee Coal and Iron Co. in 1907 and Mr. Roosevelt's connection therewith, and estimating the value of the property of the Steel Corporation at about one-third the capitalization. The report of the Republican members, much more restrained in tone, estimated, from the same data, the amount of "water" in the securities of the Steel Corporation at about one-half. There were, in addition, a number of statements by individual members of the committee, taking exception to certain points in the majority and minority reports. The recommendations of the majority were: that any corporation dealing in articles handled in interstate commerce which controls 30 per cent. of the total output of the country should *ipso facto* be deemed a monopoly; that in suits alleging a restraint of trade the burden of proof should be shifted from the Government to the defendant corporation;

that interlocking directorates and the ownership of railroads by industrial companies be prohibited; and that an injured private party be given the right to institute suit to prevent the organization of a combination in restraint of trade. The minority advocated federal incorporation of corporations capitalized at more than \$50,000,000, and federal control of such corporations by an Interstate Commission of Industry with power to prescribe maximum prices. No legislative action was taken on the reports up to the end of the year.

Investigation of Campaign Funds.

—In August an attack was made on Senator Boies Penrose, of Pennsylvania, based on letters published in the August number of *Hearst's Magazine*, charging the Senator with the receipt of \$25,000 from John D. Archbold, of the Standard Oil Company, during the Republican campaign of 1904. On Aug. 21 Senator Penrose declared in the Senate that this \$25,000 was a part of a contribution of \$125,000 made by the Standard Oil Company to Roosevelt's campaign fund, the rest of which had been paid directly to the national treasurer, Cornelius N. Bliss, since dead. He implied that Roosevelt was informed of this contribution, and had in fact solicited an additional \$150,000 from the same source, the refusal of which led to the subsequent prosecution of the Standard Oil Company under the Roosevelt administration. Senator Penrose and Mr. Archbold testified to this effect on Aug. 23 before a committee of the Senate investigating campaign contributions. Mr. Roosevelt at once issued a statement in denial of these charges, and all knowledge of Standard Oil contributions was likewise denied by George B. Cortelyou, chairman of the Republican National Committee during the campaign of 1904. On Sept. 30 a special committee of the Senate, headed by Senator Moses E. Clapp, of Minnesota, met in Washington to investigate these and other charges relating to campaign contributions. Mr. Roosevelt testified before this committee on Oct. 4. The fact of contributions by men connected with large corporations to the Republican campaign fund of 1904

was established, but there was no proof of improper relations with corporations on the part of Mr. Roosevelt. A mass of testimony was taken also on the sources of party funds in the campaigns of 1908 and 1912. At the close of the year the committee had not completed its work.

Congress in December.—The session of Congress in December lasted less than three weeks, adjournment for the holidays being taken on Dec. 19. In view of the anticipated extra session of the newly elected Congress, even less than usual in new legislation was projected in this brief period, the important problems of government being left to the incoming Sixty-third Congress under the mandate of the recent election. Among the measures proposed or brought forward for further discussion and left pending may be mentioned: the creation of a new Cabinet place, to be known as the Department of Labor; a bill to prevent interstate shipment of liquors into prohibition states (see XVI, *The Liquor Traffic*); a plan for pensioning ex-Presidents, probably called forth by a proposal of Andrew Carnegie to provide for ex-Presidents and their widows from his personal fortune and by his private benevolence; a bill authorizing the Interstate Commerce Commission to make a physical examination of all railway property in the United States; a proposal for river and harbor improvement that would carry an appropriation of \$56,000,000, urged by the chief engineer of the army; and two proposed constitutional amendments introduced by Senator Bristow, of Kansas, providing for a referendum on certain United States Supreme Court decisions (see V, *Amendments to the Federal Constitution*). The Senate proceedings in the Archbald impeachment, which have demanded the greater share of the Senate's attention, are considered elsewhere.

The chief interest in the politics of Congress has centered in the effort of the progressive Democrats in the Senate to displace Senator Martin, of Virginia, from his position as leader of the Democratic majority in that body and to prevent Senator Simmons, of North Carolina, from

succeeding by the rule of seniority to the chairmanship of the Finance Committee of the Senate. A series of conferences among progressive Senators has resulted in an understanding for a reorganization movement designed to insure the control of legislation and policies after March 4, 1913, by Senators in full sympathy with the views of President-elect Wilson. The plan for party reorganization in the Senate will involve the entire subject of Senate control and a new system of committee assignments that will distribute important committee places alike to new men and old, instead of allowing seniority in service to determine leadership and power. William J. Bryan in December urged the extension of the same principle to the organization of the House.

The President's Messages.—President Taft has continued his custom of dividing his recommendations to Congress into a series of messages, rather than attempting to cover all the subjects under consideration in one extensive document. His first message (Dec. 3) was confined to foreign relations, political and industrial. In this President Taft calls attention to the large increase in our export trade as a vindication of the foreign policy of his administration, in responding to modern ideas of commercial intercourse.

In a second message (Dec. 6) President Taft recommended: the Aldrich plan of currency reform; no amendment of the Sherman anti-trust law; denial of autonomy and independence to the Philippines; three battleships for the coming year, and a return to the policy of two battleships a year; Congressional approval of the army reorganization plan of the War College, to make the army ready instantly for war; passage of the militia pay bill to increase the compensation of the organized militia in the field; lessening the penalty when corporations inadvertently disobey the corporation tax act; citizenship without statehood for Porto Ricans; regulation of water power grants so that navigable streams may be improved by water power companies; and enactment of a workmen's compensation law. As to the tariff, the

President deemed it needless to make recommendations for Protection, since "a new Congress has been elected on a tariff for revenue only rather than a protective tariff."

The "Money Trust" Investigation.—During December the "money trust" investigation (see XIV, *Banking and Currency*) made considerable progress, and it was expected at the end of the year that the report of the investigating committee would be presented to Congress by Feb. 1, 1913. Hearings were resumed on Dec. 9,

when an inquiry was begun into the clearing-house system. Later the New York Stock Exchange was under investigation, and on Dec. 19 and 20 J. Pierpont Morgan was examined, the committee adjourning on the latter date to Jan. 9, 1913. A mass of statistics relating to banking and monetary conditions in New York and elsewhere has been accumulated, but little apparent evidence of organized control of the money market by large aggregations of capital.

LATE EVENTS OF THE YEAR

Supreme Court Decisions.—The decisions of the U. S. Supreme Court in two important suits under the Sherman anti-trust act were handed down in December. On Dec. 2 the Court, reversing an earlier decision of the U. S. Circuit Court, declared illegal the acquisition by the Union Pacific Co. of a large block of the stock of the Southern Pacific Co. and ordered the dissolution of the combination. The Court holds that where the facts and circumstances point to actual or possible restraint of interstate commerce, a direct holding of stock by one company in a second company with which it competes is in violation of the law. Actually the Union Pacific holds only 46 per cent. of the outstanding stock of the Southern Pacific Co., the Huntington interest acquired by E. H. Harriman after Mr. Huntington's death in 1900, but the court decided that this was sufficient to enable the Union Pacific to dominate Southern Pacific affairs. The Union Pacific Co. was given 90 days in which to decide upon a plan for divesting itself of its holdings of Southern Pacific stock.

In a decision in the anthracite coal cases handed down on Dec. 16, the Court holds that, while a single contract of the sort whereby the independent anthracite producers have bound themselves to deliver the output of their mines to the rail carriers for 65 per cent. of the average market price at tidewater may be entirely innocent in itself, the series of such contracts involved in the present case, being the result of a

concerted plan between the defendants to suppress competition in price between their own output and that of the independent operators through control of the sale of the latter in interstate commerce, is in violation of the anti-trust law. The Court declares unlawful also the acquisition by the different carriers of the stock of the Temple Iron Co., but finds insufficient evidence of the existence among anthracite carriers of a general combination, alleged by the Government, for an apportionment of total tonnage to the seaboard by an agreement in the nature of a pooling arrangement.

Conference of Governors.—The fifth annual conference of state governors was held in Richmond, Va., the first week in December. One of the important themes was that of agricultural credits. A committee of the governors was appointed to draft uniform rural credit laws to be recommended to the states. Upon the visit of the governors to the White House President Taft aroused further interest in the subject of making it easier for farmers to secure loans at a low rate of interest. He recommended uniform state legislation to make possible a system of credits similar to that in some European countries. A state income tax law and uniform divorce legislation were other subjects discussed. The conference effected a permanent organization by electing Miles C. Riley, of the Wisconsin Legislative Reference Library, as secretary. The conference adjourned to meet in Colorado Springs in 1913.

Republican Reorganization. — On Dec. 7 the Republican governors of 12 states coming from the Conference of Governors (q. v.) were in consultation in Washington, D. C., on the question of the reorganization of the Republican party. There were in attendance Governors Goldsborough, of Maryland, Hadley, of Missouri, Oddie, of Nevada, Tener, of Pennsylvania, Glasscock, of West Virginia, Eberhart, of Minnesota, Carroll, of Iowa, Hanna, of North Dakota, McGovern, of Wisconsin, Spry, of Utah, Vessey, of South Dakota, and Carey, of Wyoming. The specific subject discussed was reported to have been the advisability of calling a meeting of the Republican National Committee with a view of calling, prior to the Congressional campaign of 1914, a national convention of the party for the purpose of agreeing upon a platform on which both the progressives and conservatives in the party can unite.

On Dec. 18 over 500 Illinois Republicans, representing every county in the state, met in Chicago to consider reorganization and future plans. The conference adopted a resolution in line with the proposal of the Progressives, that representation of the several states in the national conventions should hereafter be equitably distributed in proportion to the party vote, with a reasonable minimum representation. The national committeeman from Illinois, Roy O. West, was instructed to use all honorable means to bring about such a rule for the party.

The Progressive Party After the Election.—Within six weeks after the election the Progressive party leaders and workers held a number of local conferences to consider the future of the party. In his first post-election speech, in New York, Nov. 19, Mr. Roosevelt advised against all bargaining or fusion with other parties. A national conference of the party adherents was held in Chicago on Dec. 10 and 11, at which there were 1,500 members of the party, representing every state in the Union. Plans were made for country-wide organization and publicity. National headquarters were established in New York and Washington, and a four-years'

campaign of education was resolved upon. A legislative reference bureau was created, to be under expert direction. A committee of seven was authorized to go to Europe to study the operation of social justice laws in force there. Professor Walter Weyl and Medill McCormick were named as two members of this committee.

The Progressive National Committee have proposed a new apportionment of delegates for the national convention of 1916. It is proposed to have a convention of 972 delegates, the number allotted to each state being based on the vote cast in November, 1912, for Roosevelt and Johnson. The change will do away with the undue representation from the South which has heretofore prevailed in the Republican conventions. Instead of basing representation on statehood and population according to the traditional federal plan, the representation will be based on party strength, so that states wherein the party is strong will have a large number of delegates, and states wherein the party is weak will have a small number. Thus in the next Progressive Convention Pennsylvania will have 91 delegates, Illinois 79, California 59, Michigan 38, while Florida, Georgia, Louisiana, and South Carolina will have only half as many delegates as in Republican National Conventions. The allotment will be one delegate for every 5,000 votes, or major fraction thereof, cast for the party candidates in 1912, though each congressional district shall be entitled to at least one delegate.

Death of Whitelaw Reid.—Whitelaw Reid, American Ambassador to Great Britain since 1905, died in his London residence on Dec. 15. Mr. Reid was born near Xenia, Ohio, Oct. 27, 1837, of Scotch Covenanter ancestors. He was graduated from Miami University in 1856. At the age of 20 he became editor of the *Xenia News*. He chose Horace Greeley as his model in newspaper work and soon became an important factor in the young Republican party in Ohio. He became the Civil War correspondent and afterwards editor of the *Cincinnati Gazette*. In 1868

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Mr. Reid became associated with Horace Greeley on the New York *Tribune*, and after Mr. Greeley's death in 1872 he became the editor of that journal. In 1889 he was appointed by President Harrison as Minister to France. In 1892 he was the Republican nominee for Vice-President with President Harrison, and upon the defeat of the party nominees he again assumed directing control of

the *Tribune*, which he retained until his appointment as Ambassador to the Court of St. James by President Roosevelt in 1905. Unusual honor was paid Mr. Reid by the British Government, in the holding of a state funeral service in Westminster Abbey and in the conveyance of the remains to the United States in the British cruiser *Natal*, which reached New York, Jan. 3, 1913.

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THE "TITANIC" DISASTER

FRANCIS G. WICKWARE

The steamer *Titanic*, of the White Star Line, owned by the Oceanic Steam Navigation Company, a member of the International Mercantile Marine Co., left Southampton for New York on her maiden voyage on Wednesday, April 10. The *Titanic* was launched at the yards of Harland and Wolff, Belfast, May 31, 1911, after being on the stocks exactly 14 months. She was the largest and finest ship afloat; her dimensions—length 882.5 ft. and breadth 92.5 ft.—were practically the same as those of her sister ship, the *Olympic* (see *AMERICAN YEAR BOOK*, 1911, p. 731), but her gross tonnage of 46,382 tons was greater by 1,004 tons. The *Titanic* cost \$7,500,000. She had three propellers, driven by a combination of reciprocating engines and steam turbine, developing 51,500 h.p. and designed for an average speed of 21 knots. The *Titanic* had accommodations for 2,350 passengers, 750 first-class, 500 second-class, and 1,100 steerage. She left Southampton with a full crew of 940, 330 passengers in the first cabin, 320 in the second cabin, and 750 in the steerage.

At 11.40 on the night of Sunday, April 14, in latitude 41 deg. 46 min. north and longitude 50 deg. 14 min. west, approximately 400 miles from the Newfoundland coast and 1,150 miles from New York, the *Titanic* collided with an enormous iceberg, largely submerged but standing at least 120 ft. out of the water, and sank less than three hours later in 2,760 fathoms of water. Wireless calls for help were caught by the Allan liner *Virginian*, the *Olympic* and *Baltic*, of the White Star Line, and the Cunarder *Carpathia*. For two hours the *Titanic* operator, Jack Phillips, continued to report the condition of the doomed ship; suddenly the messages became blurred and in-

distinct, and in a few minutes ceased altogether. The *Carpathia*, Capt. Arthur H. Rostron, several days out of New York, bound for the Mediterranean, was within 58 miles of the *Titanic's* position. She covered the distance in three and a half hours, and reached the scene at 4 a. m. Monday, less than two hours after the *Titanic* had disappeared. All the survivors, to the number of 705, were taken on board from lifeboats, rafts and improvised supports, and at 8:30 a. m. the *Carpathia* started for New York.

The first news of the disaster to reach New York came by wireless from the Marconi station at Cape Race. At 10.25 (Eastern time) Sunday night Cape Race caught the *Titanic's* first call for assistance. Half an hour later came a message that the *Titanic* was sinking by the head and that women were being put off in lifeboats. The *Virginian* later reported to Cape Race that the *Titanic's* wireless signals ceased at 12.27 a. m. These meagre details were telegraphed to New York and appeared in the morning papers of Monday. During the day the news caused little apprehension of a serious disaster. The first real intimation of the extent of the catastrophe came in a message from Capt. Haddock, of the *Olympic*, forwarded from Cape Race in the early evening. Capt. Haddock reported that the *Titanic* had gone down and that the *Carpathia* was on her way to New York with 655 survivors. From midnight Monday the White Star offices were besieged by anxious crowds, waiting in suspense for news of friends or relatives among those who had sailed on the *Titanic*. On Tuesday a partial and inaccurate list of the survivors on the *Carpathia* was relayed by the *Olympic* to Cape Race;

the same dispatch dispelled the lingering hope that rescues had been made by other vessels. It was not until Wednesday that the *Carpathia* came within range of the shore stations. Extraordinary efforts were made to establish communication with her, but so many amateurs, however, were anxious to talk with the *Carpathia* that only a few intelligible messages were picked up by the shore stations. The nature of these messages indicated that Capt. Rostron was permitting the rescued passengers of the *Titanic* to make first use of the wireless. Throughout Thursday only personal messages were received, and it was not until the *Carpathia* docked, at 9.30 in the evening, that the story of the wreck was told.

The night of the 14th was calm, clear and starlit. Capt. Smith, of the *Titanic*, had been warned by the *Touraine*, the *Amerika*, the *Californian*, and other ships of the presence of ice in the steamship track, unusually far south. The temperature was falling rapidly as the *Titanic* neared the ice field; at ten o'clock it was 31 deg. Nevertheless, the full speed of 21 knots was maintained, and although two lookouts were posted in the crow's nest, they were not supplied with binoculars. The first warning of danger came from the lookouts, who reported ice dead ahead an instant before the vessel struck. Chief Officer Murdock, who was on the bridge, immediately shifted the course of the *Titanic* to port, but a few seconds too late to avoid collision. A submerged ledge of the iceberg caught the ship about 25 ft. aft of the stem on the starboard side, and ripped off the plates of the bilge to a point amidships. The vessel struck with a slight grating sound and practically without shock. Among the passengers, most of whom were still awake, the slight impact was scarcely noticed. At the first shock of the collision the engines had been reversed and the watertight bulkheads closed. For some minutes even the officers believed that a great danger had been safely passed. They reassured the passengers, alarmed at the sudden stopping of the engines, and induced many of

them to return to bed. A hurried examination, however, showed that several holds were filling with water; very soon the vessel took a decided list to starboard and began to settle by the head. The passengers were all aroused, fitted with life belts, and ordered on deck. There was no panic. Few of the passengers had lost confidence in the unsinkable ship, and none in the adequacy of the lifeboat equipment. The women, especially, hesitated to trust themselves to the small boats, and the first boat load to leave the ship's side was composed largely of men. The boats were got away slowly; only a small proportion of the crew appeared to be experienced seamen, and boat drill had been neglected. Some of the boats were lowered with difficulty; one capsized when it struck the water; a few were not properly filled; the collapsible boats, of which the *Titanic* carried four, were not properly put together; one could not be launched at all. The last boat did not leave the ship until two hours after the first and half an hour before the vessel sank. There was no longer any doubt of the fate of the *Titanic*; the last boat was launched without davits from the boat deck, once 70 ft. above the water. There was no longer any doubt that for many hundreds death was imminent; the 20 lifeboats carried by the *Titanic*, including the four collapsibles, could accommodate at most a thousand persons, and many of them had left only partially filled. Still there was no panic and little confusion. The men passengers stood aside or assisted the officers in putting the women and children in the boats. Husbands were parted from wives and fathers from children, but manly discipline to the rule of the sea never wavered. Nor was heroism confined to the men. There were women who left an overloaded boat for a chance in another which never came, and others who refused to abandon their husbands in face of death. And of those who went down with the captain in the course of duty, a special tribute of honor is due to the members of the band, who played on deck without intermission, and to the engineers who kept the lighting dynamos run-

ning until the engine room was flooded just before the end.

From the boats the rescued watched the final scene. The *Titanic*, listing heavily, gradually settled by the head until her bridge was submerged. Still the ship blazed with light, and to the watchers came the strains of "Autumn." Presently the stern of the vessel began to rise. At 2.20, almost immediately after, there occurred a series of explosions. The lights went out, flashed once again, and went out altogether. For several minutes the great ship stood half submerged, almost vertical in the water, then, at 2.40, slowly and silently slid beneath the waves. A few of those left on board had miraculous escapes on improvised rafts, the upturned lifeboat, and other supports; a few others were picked up by the boats. But of the 2,340 who sailed from Southampton, 1,635 perished in the icy water or were rescued to die of exposure in the boats.

The first boats to leave the ship's side pulled for a light which appeared for several minutes on the horizon to the south of the *Titanic's* position. The steamer *Californian*, of the Leyland Line, was less than 20 miles away. She was surrounded by ice and had stopped her engines to wait for daylight. Her wireless operator had warned the *Titanic* of ice early in the afternoon of Sunday. The ship carried no auxiliary source of energy for the wireless apparatus, and when the engines stopped all communication was interrupted. Still, the *Californian* was near enough to the *Titanic* to see the rockets sent up as signals of distress. As a matter of fact, the *Titanic's* signals were seen on board the *Californian*, but her captain made no attempt to reach the vessel in distress.

Of the survivors brought to port by the *Carpathia*, 210 were first-class passengers, 125 second-class, and 200 third-class; the rest were members of the crew, four officers, 39 seamen, 71 firemen, and 96 stewards. Among the rescued was J. Bruce Ismay, president of the International Mercantile Marine Corporation, the only one of the more notable passengers to escape. Among the victims were

more men famous on both sides of the Atlantic than ever before perished in such a catastrophe. Perhaps the best known was William T. Stead, editor of the *Review of Reviews*, who was coming to the United States to give an address before the Men and Religion Forward Movement. The list of prominent Americans included John Jacob Astor, whose bride of less than a year was saved; Major Archibald Butt, military aide to President Taft; Jacques Futrelle, novelist, whose wife was among the rescued; Benjamin Gugenheim, associated with his brothers in large mining and smelting enterprises; Henry B. Harris, theatrical manager, whose wife was saved; Charles M. Hays, president of the Grand Trunk and Grand Trunk Pacific Railways, whose wife was rescued; Francis D. Millet, artist and war correspondent, secretary of the American Federation of Arts, and member of the Supervisory Board of the AMERICAN YEAB BOOK; Isidor Straus, merchant in New York, whose wife refused to leave him and went down with the ship; John B. Thayer, fourth vice-president of the Pennsylvania Railroad, whose wife and son were among the survivors; George D. Widener, traction magnate of Philadelphia, whose wife was saved, and his son Harry.

The cable steamer *Mackay-Bennett*, chartered by the White Star Line to search for bodies at the scene of the disaster, left Halifax April 16. She returned April 30 with 190 bodies, among them those of Colonel Astor and Mr. Straus; 116 bodies, mostly of members of the crew, were buried at sea. The Canadian Government steamer *Minia*, dispatched on a similar errand, returned May 6 with 15 bodies, among them that of Mr. Hays, having buried two at sea. These were all the bodies recovered.

A Congressional inquiry into the causes of the wreck of the *Titanic* and the attendant loss of life was ordered by a resolution adopted by the United States Senate on Wednesday, April 17. A committee of seven members was appointed, under the chairmanship of Senator William Alden Smith of Michigan. On Friday and Saturday preliminary hear-

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ings were held in New York, at which some of the survivors were examined. Hearings before the full committee were begun in Washington on the 22nd and continued to the 30th, after which Senator Smith made further inquiries in New York as to the alleged suppression of wireless messages by the officials of the White Star Line. The findings of the committee were presented to the Senate May 28. The report reviewed the evidence and summarized the main conclusions of the committee, as follows:

The supposedly water-tight compartments of the *Titanic* were not water-tight, because of the non-water-tight condition of the decks where the transverse bulkheads ended.

The steamship *Californian*, controlled by the same concern as the *Titanic*, was nearer the sinking steamer than the 19 miles reported by her captain, and her officers and crew saw the distress signals of the *Titanic* and failed to respond to them in accordance with the dictates of humanity, international usage, and the requirements of law. The committee concludes that the *Californian* might have saved all the lost passengers and crew of the ship that went down.

The mysterious lights on an unknown ship, seen by the passengers on the *Titanic*, undoubtedly were on the *Californian*, less than 19 miles away.

The full capacity of the *Titanic's* life-boats was not utilized, because, while only 706 persons were saved, the ship's boats could have carried 1,176.

No general alarm was sounded, no whistle blown, and no systematic warning was given to the endangered passengers, and it was 15 or 20 minutes after the collision before Captain Smith ordered the *Titanic's* wireless operator to send out a distress message.

The *Titanic's* crew was only meagerly acquainted with their positions and duties in an accident, and only one drill was held before the maiden trip. Many of the crew joined the ship only a few hours before she sailed and were in ignorance of their positions until the following Friday.

In addition the report offered recommendations for legislation, outlined as follows:

It is recommended that all ships carrying more than 100 passengers have two search-lights; that a revision be made of steamship inspection laws of foreign countries to the standard pro-

posed in the United States; that every ship be required to carry sufficient life-boats for all passengers and crew; that the use of wireless be regulated to prevent interference by amateurs, and that all ships have a wireless operator on constant duty.

Bulkheads should be so spaced that any two adjacent compartments of a ship might be flooded without sinking. Transverse bulkheads forward and abaft the machinery should be continued water-tight to the uppermost continuous structural deck, and this deck should be fitted water-tight.

A bill to enact this legislation into law and a resolution empowering President Taft to appoint a commission of experts to study and report on needed changes in United States maritime laws and regulations now in force, were introduced by Senator Smith, but at the adjournment of Congress had not emerged from the Senate Committee on Commerce.

The universal horror caused by this greatest of maritime disasters found expression in a world-wide revision of laws relating to the safety of ocean travel. On April 20 the United States Senate passed a resolution advising the President:

That the Senate would favor treaties with England, France, Germany, and other maritime governments to regulate the course and speed of all vessels engaged in the carrying of passengers at sea; to determine the number of life-boats, rafts, search-lights, and wireless apparatus to be carried by such vessels, and to assure the use of such other equipment as shall be adequate to secure the safety of such vessels, passengers, and crews.

The resolution was applauded by the German Government, which announced, through Count von Bernstorff, its readiness to enter into negotiations looking to an agreement among all maritime nations on the safeguarding of the lives of ocean travelers. A resolution of the House of Representatives, passed May 6, authorized the President to ascertain the opinion of maritime nations on the desirability of an international maritime conference, to be held in Washington, to consider uniform laws and regulations for the greater security of life at sea. The proposed action, however, was forestalled by

the German Government, which issued a similar invitation while the resolution was pending in the Senate.

A bill amending the Act of June 24, 1910, requiring ocean vessels to carry wireless apparatus, passed the House July 17 and the Senate July 18, and was approved by President Taft July 23. It provided:

That from and after Oct. 1, 1912, it shall be unlawful for any steamer of the United States or of any foreign country navigating the ocean or the Great Lakes and licensed to carry, or carrying, fifty or more persons, including passengers or crew or both, to leave or attempt to leave any port of the United States unless such steamer shall be equipped with an efficient apparatus for radio communication, in good working order, capable of transmitting and receiving messages over a distance of at least 100 miles, day or night. An auxiliary power supply, independent of the vessel's main electric power plant, must be provided, which will enable the sending set for at least four hours to send messages over a distance of at least 100 miles, day or night, and efficient communication between the operator in the radio room and the bridge shall be maintained at all times.

The radio equipment must be in charge of two or more persons skilled in the use of such apparatus, one or the other of whom shall be on duty at all times while the vessel is being navigated.

The Act does not apply to steamers plying between ports less than 200 miles apart. So far as it applies to vessels on the Great Lakes, the Act goes into effect April 1, 1913. Ocean cargo steamers are given until July 1, 1913, to comply with its provisions.

The Alexander bill, another important measure, passed the House Aug. 10, but was not acted on by the Senate before the close of the session. Its principal provision, amending section 4,488 of the Revised Statutes, contained stringent regulations for the equipment of steamers with lifeboats, searchlights, and other life-saving apparatus. Without waiting for Congressional action, the U. S. Steamboat Inspection Service, in the early summer, made material changes in the regulations governing life-saving appliances on ocean, lake, bay and sound steamers.

The British Board of Trade on May 2 began an investigation of the disaster before a special Court of Inquiry presided over by Lord Mersey. A good deal of attention was paid to the inaction of Capt. Lord of the *Californian*, who was one of the principal witnesses. The taking of testimony was completed July 4, and the judgment of the Court was delivered July 30. The Court found that the collision was due to the excessive speed at which the ship was navigated; that a proper watch was not kept; that the Leyland liner *Californian* might have reached the *Titanic* if she had attempted to do so; that the track followed was reasonably safe with proper vigilance; and that there was no discrimination against third-class passengers in the saving of life. The most important findings of the Court were that the *Titanic* was sufficiently and efficiently officered and manned, and complied with all the regulations of the British Merchant Shipping Act regarding safety, but that the arrangements for manning and launching the lifeboats in an emergency were insufficient, and that no drill had been held.

In accordance with recommendations of the Court, special committees of the Board of Trade were appointed to consider the questions of bulkhead construction and the provision of boats and davits. Without waiting for their reports, the Board of Trade published, early in September, the draft of new life-saving appliance rules, which will be offered in Parliament as amendments to the British Merchant Shipping Act. The proposed regulations provide that lifeboat accommodation sufficient for all on board shall be provided in the case of all foreign-going passenger ships; that the number of boats under davits shall no longer depend on tonnage, but on the length of the ship; and that where the boat deck is of excessive height above the water, the ship may be required to carry some approved form of launching apparatus in addition to, or in lieu of, davits. The existing general rule that a less number of boats might be provided in the case of ships divided into efficient watertight compartments is abrogated.

II. POPULAR GOVERNMENT AND CURRENT POLITICS

ARTHUR N. HOLCOMBE

PROGRESS OF POPULAR GOVERNMENT¹

The year 1912 is notable as a year of innovations. The long-deferred constitutional amendment to provide for the direct election of United States senators was submitted by Congress to the states, and ratified by two of them. A dozen of the northern and western states have adopted the "Oregon plan" for the direct election of senators, and another dozen of the southern states have also anticipated the amendment of the federal constitution through the development of their direct-primary systems. Complete state-wide systems of direct nominations have been established in two states, bringing the total number of such states to 36. In addition, two states, New York and Maryland, have incomplete systems, leaving only ten states without any mandatory system of state-wide direct primary. The presidential-preference primary has been established in seven states, bringing the total number of such states to 12. The initiative and referendum were adopted in five states, and in a sixth, Nevada, where the referendum has existed since 1905, the procedure for direct legislation by the people was completed by the adop-

tion of the initiative. The total number of states in which direct-legislation amendments are now in effect is, therefore, 17. The state-wide recall was established in five states, in two of which, however, it does not apply to the judiciary. In one state, Arizona, where it had previously existed, it was extended to the judiciary, and in one other state, Colorado, the people adopted also the "recall of judicial decisions." The total number of states in which the state-wide recall is now in operation is, therefore, eight. The advisory recall was introduced in one state, Arizona, to apply to federal officers. In Oregon a radical reorganization of the entire legislative branch of the state government was attempted. Preferential voting was established in two states, bringing the total number of such states to five. Corrupt-practices legislation was enacted in several states, and only eight states appear now to be wholly without any laws to regulate the use of money in elections beyond the ordinary law against bribery. Finally, equal suffrage for women has been adopted in three states, bringing the total number of women-suffrage states to nine.

POPULAR ELECTION OF UNITED STATES SENATORS

The Amendment to the Federal Constitution.—The widespread and long-continued demand for the direct

¹ The latest returns available at the end of the year of the votes on constitutional amendments submitted at the election of Nov. 5 to the people of the different states are given in Department VI, *Amendments to State Constitutions*.

election of United States senators, frustrated at the special session of the 62d Congress in the spring of 1911, was at last heeded by Congress at its regular session a year later. At one time or another most of the states have adopted resolutions begging Congress to submit an amendment to the federal constitution to provide for the election of senators

directly by the people, and in 1911 resolutions providing for the submission of constitutional amendments passed each branch of Congress by the requisite two-thirds majority (see AMERICAN YEAR BOOK, 1911, p. 178-9). These resolutions, however, passed the House and the Senate in different forms, and the resulting deadlock between the two houses prevented the submission of any amendment at that time. In 1912 the representatives of the southern states in Congress abandoned their opposition to the submission of an amendment giving the federal government the same control over the election of senators as it possesses of representatives. This action removed the cause of the deadlock between the Republican Senate and the Democratic House. The following joint resolution was adopted by the latter body on April 13 by a vote of 296 to 16, and by the former on June 12 by a vote of 64 to 24:

Resolved by the Senate and House of Representatives of the United States of America, in Congress assembled (two-thirds of each house concurring therein), that in lieu of the first paragraph of section three of Article I of the Constitution of the United States, and in lieu of so much of paragraph two of the same section as relates to the filling of vacancies, the following be proposed as an amendment to the Constitution, which shall be valid to all intents and purposes as part of the Constitution when ratified by the legislatures of three-fourths of the states:

The Senate of the United States shall be composed of two Senators from each State, elected by the people thereof for six years; and each Senator shall have one vote. The electors in each state shall have the qualifications requisite for electors of the most numerous branch of the State legislature.

When vacancies happen in the representation of any State in the Senate, the executive authority of such State shall issue writs of election to fill such vacancies: Provided that the legislature of any State may empower the executive thereof to make temporary appointments until the people fill the vacancies by election as the legislature may direct.

This amendment shall not be so construed as to effect the election or term of any Senator chosen before it becomes valid as part of the Constitution.

This amendment was immediately ratified by the legislatures of Mas-

sachusetts and Minnesota. The latter state had previously adopted the Oregon plan for the popular election of United States senators (see AMERICAN YEAR BOOK, 1910, p. 140; 1911, p. 179), but in Massachusetts the same legislature that ratified the constitutional amendment refused to adopt the Oregon plan, although a senator was to be chosen in that state for the term beginning March 4, 1913. The new state of Arizona, however, adopted the Oregon plan, and Montana did likewise, through the use of the initiative, making the total number of Oregon-plan states now 12. The same result is achieved in a round dozen of southern states by law or custom through the regular party primaries. Hence half of the states have virtually anticipated the adoption of the proposed amendment; and as the legislatures in nearly all of the states will meet during 1913, its formal ratification should not be long delayed.

The Oregon Plan.—Not all the northern states which have adopted the Oregon plan for the direct election of United States senators have followed in all respects the original model. In Colorado, where a law for the direct election of United States senators was enacted at a special session of the legislature in the autumn of 1910, the Oregon plan of giving candidates for the legislature the option between two pledges was adopted, but these pledges are not the same as in Oregon. The legislative candidate in Colorado may choose between a pledge to vote for the people's candidate for United States senator, and one to vote for the party's candidate for that office. The object obviously is to avoid the situation which arose in Oregon after the election of 1908, when the majority in the legislature, including most of the members of the dominant party therein, found themselves pledged to vote for a candidate of the minority party, who had proved more popular with the voters than the candidate of the dominant party. The Oregon plan thus tends to facilitate the separation of state and national issues, whereas the Colorado plan encourages the preservation of the same party divisions on all issues.

THE DIRECT PRIMARY

Summary of Extension in 1912.—

The system of nominating candidates for public office by a direct vote of the people has continued during 1912 to make progress in the states, and has received its first test as a mode of selecting presidential candidates. Minnesota, the first northern state to establish the direct primary by law (adopted for Hennepin County in 1899), has at last extended the system to the selection of all candidates for state elective offices. This Minnesota law makes provision for an open primary without an official party enrollment and also for voting second choices in case more than two persons seek the same nomination, according to the plan adopted in Wisconsin in 1911 (*AMERICAN YEAR BOOK*, 1910, p. 144). Four southern states, Kentucky, Louisiana, Mississippi, and Virginia, strengthened their existing direct-primary systems, particularly with respect to the nomination of United States senators; Arizona adapted her territorial system of direct nominations to the needs of a state; California provided for the rotation of names upon the ballot in order to eliminate the advantages supposed to accrue to the candidate whose name heads the list when arranged in alphabetical order; and in Montana and South Dakota complete systems of direct nominations, mandatory and state-wide, having been rejected by the legislatures, were submitted to the people on the initiative of the requisite percentage of the voters. In South Dakota a direct-primary system of the usual type has been in force since 1907, but in Montana the legislature has steadily refused to establish any system of direct nominations. Both the Montana and South Dakota measures were adopted by the people at the November election, the latter by a vote of 58,139 to 32,256.

Pre-Primary Designations.—The general characteristics of direct primary legislation have already been discussed in detail in a previous issue (*AMERICAN YEAR BOOK*, 1910, pp. 141-5), but recent legislation affords some notable innovations in respect to sundry details. The New York

direct-primary law described in the *AMERICAN YEAR BOOK* for 1911 (p. 185), has been unsatisfactory in practice. The failure of this law, however, does not prove that Governor Hughes' original measure (see *AMERICAN YEAR BOOK*, 1910, p. 147) would have been equally unsatisfactory. Another attempt to give the regular party organizations a responsible part in the selection of candidates under the direct-primary system was made in Colorado by a law enacted in the autumn of 1910, and this plan has proved less objectionable in practice than that of New York. The Colorado plan, unlike the New York plan, applied to all elective officers, including United States senators, and contained no provisions for party enrollment, but the most significant point of difference related to the manner of designating candidates to run at the primary for the regular party nominations. In New York these designations are made by the regular party committees and enjoy a preferential position on the primary ballot under the official party emblem. In Colorado the designations are made by representative party assemblies, organized in accordance with law, in which a ballot is taken to select candidates for each nomination, and all persons receiving 10 per cent. of the total vote in the assembly become official party candidates for the nomination in question, their names *ipso facto* going on the primary ballot. The Colorado plan provides a fairer field at the primary than does the New York plan, but both increase the importance of controlling the party machinery without materially diminishing the work to be done by independent candidates for a party nomination who have to fight the regular organization.

The South Dakota Plan.—The most radical attempt to provide a fair field at the primary for anti-organization candidates through the regulation of the party machinery was embodied in the measure submitted under the initiative to the people of South Dakota in 1912. This measure provides not only for an official party enrollment, but also for the affilia-

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tion of partisans with the official majority or minority of the party. The official majority of the party is that portion of the party which supported the successful candidate for the party nomination for governor at the last preceding primary election. The proposed measure further provides for the election not only of regular county and state party committees, but also of "majority" and "minority" "proposal committees" for counties and state. The "majority proposal committees" are authorized to promulgate platforms and propose candidates for party nominations in harmony with the principles of the last regular party candidate for governor. The "minority proposal committees" are authorized to promulgate platforms and propose candidates for party nominations in harmony with the principles of the leading unsuccessful candidate at the last primary election for the party nomination for governor. At the next primary election the enrolled members of the party are to choose between the party platforms and candidates for party nominations proposed by the two sets of party proposal committees.

This South Dakota measure contains other innovations. Candidates for any national or state appointive office except postmaster may hand in their applications to the secretary of state before the general election. Directly after the general election the state committee of the successful party or parties, if different parties win in state and nation, are to meet at the state capital and proceed to determine by open ballot which applicants for the appointive offices shall be recommended for appointment to the appropriate appointing authority. In the case of postmasters special primaries may be held in the locality in which a vacancy is to occur, in or-

der to procure an official indorsement for an applicant for the place from the local membership of the party in power. Finally, an official party recall was proposed in this South Dakota measure. Upon the presentation to the secretary of state and to the appropriate party chairman of a petition signed by one-third of the party voters in the district concerned, the party state committee must give a hearing to the petitioners and to the officer against whom the recall may have been invoked. If two-thirds of the committee vote that the charge has been sustained, the party chairman will call upon the condemned officer to resign. Candidates for regular party nominations are to be required either to promise or to refuse to promise to obey such recalls before their names may be proposed for a party nomination by any of the official party proposal committees.

Such was the South Dakota plan of 1912. In order to put this plan into operation there would be necessary a sort of preliminary primary or secondary, so to speak, for the choice of members of the majority and minority proposal committees. The essential purpose of this plan may therefore be summarily described as the establishment of two competitive party nominating organs, instead of one monopolistic organ, as under the New York and Colorado plans, and of a secondary, by way of prelude to the primary election. These attempts to combine organized party responsibility with equality of opportunity for independent candidates for regular party nominations seem labored and over complicated. They raise the question whether more effective popular control of elective officers may not better be sought in greater simplicity rather than in greater complexity of nominating machinery.

PRESIDENTIAL PREFERENCE PRIMARY

Adoption in 1912.—The most interesting direct-primary legislation in 1912 was enacted in connection with the nomination of candidates for President of the United States. By the end of 1911 the direct presidential-preference primary had been established in five states: Oregon, Ne-

braska, New Jersey, North Dakota, and Wisconsin. In the spring of 1912 it was established in half a dozen of the other states: California, Illinois, Maryland, Massachusetts, Michigan, and South Dakota, and subsequently at the November election it was submitted under the ini-

tiative to the voters of Montana. In Michigan, on account of the constitutional provision enabling new legislation to go into effect only after 90 days, the preferential-primary law could not control the selection of delegates to the national conventions of 1912. Consequently the system was actually employed in only 10 states.

The New Jersey Law.—A typical presidential-preference primary law is that of New Jersey (see *AMERICAN YEAR BOOK*, 1911, p. 186). This law provides that delegates to the national conventions of parties recognized by law shall be selected directly by the party voters, and may be pledged to support a particular candidate for the presidential nomination. At the same time the party voters may indicate their preference directly between those candidates whose names shall have been placed on the primary ballot by petition of 1,000 of their party friends within the state. The law does not attempt to bind the successful candidates for selection as delegates to a national convention to support the presidential candidate preferred by the party voters within the state, although any candidate or group of candidates for selection as delegates may pledge themselves to support, if successful, the party's choice. Thus the principle of the Oregon plan for the direct election of United States senators is rendered optional for the selection of presidential candidates, so far at least as the vote of the state delegation in the national convention is concerned. The New Jersey plan provides further that the delegates shall be elected by congressional districts, except the allotted number of delegates-at-large, who are to be elected by the party voters of the whole state. Thus the New Jersey presidential-preference primary, though established for all legal parties, was not intended to interfere with the maintenance of the unit rule in Democratic national conventions or of the congressional-district autonomy rule in Republican national conventions.

Operation of the Primary.—The presidential-preference primary laws generally resemble closely that of New Jersey. But the preference primary did not operate equally well

in all the states. In South Dakota there were three separate delegations pledged to Woodrow Wilson and to Champ Clark by various and somewhat ambiguous statements, thus dividing the voters favorable to any one of the candidates and confusing them as to which delegation should receive their support. The result was the appearance of contesting delegations from that state before the Democratic national convention. In Massachusetts two complete Republican delegations were pledged, not to the party choice, but to President Taft and Theodore Roosevelt respectively, and in addition one individual ran alone for delegate-at-large, pledged to President Taft. Roosevelt lost the direct preferential vote by a small margin; on the other hand, through the dispersion of the Taft vote among more candidates for delegate-at-large than could be elected, the delegates-at-large pledged to Roosevelt were elected. Alternates chosen at the same time were pledged to Taft. Again, so close was the vote that Taft delegates were chosen in two congressional districts in which Roosevelt received a majority of the direct preference votes. The Massachusetts law, under which this confusion occurred, was almost identical with that of New Jersey.

In several of the states, however, the preferential-primary plan differed materially from that of New Jersey and Massachusetts. In Maryland the selection of delegates was left to a state convention, delegates to which were chosen at the presidential-preference primary, and which was intended to be guided by the preference of the party voters as revealed at the primary. But if, as nearly happened, the convention should be controlled by opponents of the candidate for whom a preference was indicated at the primary, the law would fail of its purpose. How easily this might happen is shown by the experience of Ohio, where district delegates were chosen at a direct primary, and delegates-at-large were chosen by a state convention, the delegates to which were chosen at the same primary. Roosevelt delegates were chosen in a majority of the districts, but the state convention was controlled by

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the Taft forces. In California and South Dakota the law provided for the election of all delegates on a general ticket, thus establishing the unit rule for the state delegations of all parties. The Republican National Convention refused to acknowledge the power of a state legislature to set aside the rules of the national convention, and two of the California delegates, nominally representing a district in which the local preference was alleged to be at variance with the general preference of the state as a whole, were unseated in favor of two members of the general ticket which had been defeated in the state at large. In Oregon the law provided that all delegates should be elected by the state at large, but that each voter should vote for one delegate only. This rather crude scheme for the proportional representation of all factions of each legal party in its state delegation resulted in the choice of a Republican delegation, a minority of whose members were pledged to the presidential candidate who was preferred by the majority of Republican voters attending the primary. Hence, although the delegation obeyed its instructions by voting for the preferred candidate when presidential nominations were in order in the convention, on all other questions coming before the convention, it failed to represent the wishes of the majority of the voters who elected it. (See also I, *American History*.)

Criticism of the results of the first test of the direct primary in the nomination of presidential candidates among politicians and in the press followed, in the main, these general lines: First, the presidential nominating machinery cannot safely be left to the unregulated control of private individuals. Secondly, state regulation is inadequate; for national conventions will not be bound by state legislation, but will set such legislation aside when in conflict with the will of the majority of the convention. Moreover, a uniform nominating process throughout

the country is desirable, and uniformity cannot be attained by state legislation. Thirdly, participation in presidential primary elections should not be dependent upon enrolment in state parties under state laws. Such confusion of state and national party affiliations impedes the separation of state and national issues, and thereby interferes with the free expression of public opinion. If there is to be any enrolment in national parties, it should be regulated by federal law without reference to party divisions within the states. Fourthly, the system of making presidential nominations through the instrumentality of delegate conventions is cumbersome and unnecessary. The better plan would seem to be the establishment of a national direct primary, open to all voters without regard to local party affiliations, the two candidates carrying the greatest number of states and congressional districts to be the only candidates at the general election. Fifthly, voters are generally even less interested in Vice-Presidential nominations than delegates to national conventions have been in the past, and the direct nominating system is of doubtful value as a means of selecting candidates for the Vice-Presidency. Finally, the time would seem to be ripe for a change in the method of electing the President. Now that the direct election of senators is in a fair way to be brought about by constitutional amendment, the same process might be resorted to for the purpose of eliminating the obsolete electoral college and establishing a more direct procedure for the choice of the chief magistrate.

Direct Election of President and Vice-President.—Senator Works, of California, on Dec. 3, introduced an amendment providing for the abolition of the Electoral College and the direct election of the President and Vice-President. The resolution was referred to a committee, and no action was taken up to the close of the year.

DIRECT LEGISLATION

Extension of the Initiative and Referendum.—Constitutional amend-

ments providing for the initiative and referendum were voted on in Novem-

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ber in five states: Idaho, Nebraska, Washington, Wyoming, and Mississippi. Submission in the first four of these states was provided for by legislative acts passed in 1911, and in Mississippi in 1912. In North Dakota and Wisconsin, where initiative and referendum amendments were proposed by the legislatures of 1911, a second legislative indorsement in 1913 is requisite before the amendments can go to the people for ratification. In Nevada, where the referendum has existed since 1905, an initiative amendment was submitted to the people in 1912. In Massachusetts the legislature rejected the initiative, but indorsed the referendum in a very restricted form. Similar action must be taken by the legislature of 1913 before the amendment can be submitted to the people. In Florida an initiative and referendum amendment was proposed by the legislature of 1911, but the propriety of its submission to the people was challenged, and the question was referred to the Supreme Court of the state. In Indiana a new constitution, containing a clause authorizing the legislature to establish the initiative and referendum under certain restrictions, was proposed by the legislature of 1911, but the propriety of its submission to the people was also challenged, and the Supreme Court of the state enjoined its further consideration. In New Hampshire a constitutional convention rejected the initiative and referendum June 19 by a vote of 133 to 227. In Ohio a constitutional convention submitted an amendment to the people, and it was adopted Sept. 3 by a vote of 312,592 to 231,312. In Oregon a retrograde step was attempted by the submission of an amendment under the initiative to require a majority of all votes cast at the election for the adoption of measures hereafter to be referred or submitted to the people. The measures submitted to the people in November were generally adopted (see VI, *Amendments to State Constitutions*). In Mississippi, where the amendment was adopted

by a vote of nearly two to one, the affirmative vote was less than a majority of all the votes cast in the election, and under the constitution of that state the amendment failed to carry. In Oregon the proposed amendment was defeated. The effect of such a proposal as that submitted in Oregon, as well as other features of initiative and referendum amendments, has been discussed in the YEAR BOOK for 1911 (pp. 180-3). The Ohio amendment, however, contains some novel features and merits special consideration.

The Ohio Plan.—The Ohio plan applies to both constitutional and statutory measures. Constitutional amendments may be initiated directly by the people through the filing of a petition signed by at least one-tenth as many voters as voted for governor at the last preceding election. A six per cent. petition refers any act of the legislature to the people, suspending the operation of the act until the people shall have pronounced upon it, but the legislature may by a two-thirds vote declare the existence of an emergency, thus putting the measure into operation at once. The people, however, may still veto it at a subsequent election. The Ohio plan does not contain any provision for the direct initiation of statutes, but only for the indirect initiative, first introduced in this country in the Wisconsin amendment proposed by the legislature of that state in 1911 (see AMERICAN YEAR BOOK, 1911, p. 183). The Ohio plan, however, differs from that of Wisconsin. In Ohio, statutory measures may be introduced into the legislature by a three per cent. petition. If rejected by the legislature, an additional petition of three per cent. submits the measure to the people, either in its original form or with such amendments as the petitioners may choose. A majority of the votes cast on a measure is declared to be sufficient for adoption by the people, and provision is made for a state publicity pamphlet to disseminate information about measures referred or submitted to the people.

THE RECALL

The Recall in State Government.—The most discussed feature of popu-

lar government during 1912 has been the recall. During 1911 the recall

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was adopted in California and Arizona (in the latter state, applying only to legislative and executive officers), and provision for the submission in 1912 of constitutional amendments establishing the recall was made in Idaho, Nevada, and Washington. In the same year provision was made for the submission of recall amendments in 1914 in North Dakota and Wisconsin, provided the legislatures of those states meeting in 1913 indorse the proposed amendments. In 1912 the Arizona legislature provided for the submission of an amendment to the people at the general election extending the recall to the judiciary, and the Louisiana legislature proposed a recall amendment not applying to the judiciary. Recall amendments were also submitted upon the initiative of the requisite number of voters in Arkansas and Colorado. On the other hand, constitutional conventions in New Hampshire and Ohio declined to submit recall amendments, and in Indiana a new constitution proposed in 1911, containing a provision authorizing the legislature to establish the recall, subject to certain restrictions, was declared by the courts to have been improperly framed, and was not submitted to the people. At the November election the recall amendments were adopted in Arizona, Colorado, Idaho, Nevada, and Washington, but not in Louisiana. The Arkansas amendment was defeated in September (see VI, *Amendments to State Constitutions*).

Features of the State-wide Recall.—The chief features of the state-wide recall are (1) its scope; (2) the size of the petition required to institute a special recall election; (3) the mode of conducting the election; and (4) the provision made for acquainting the voters with the grounds of recall alleged by petitioners and with the defense of the accused.

(1) The recall may apply to all elective state officers, or to all except judicial officers. The former is the scope of the original Oregon recall (1908), of the California (1911), Arizona (1911-12), Arkansas (1912), Colorado (1912), and Nevada (1912) amendments, and of the amendment proposed for submission in 1914 in

North Dakota. The Idaho, Louisiana, Washington, and Wisconsin amendments do not apply to the judiciary.

(2) Petitions for a special recall election must in general be signed by one-fourth as many voters as voted for all candidates for the office in question at the last preceding election, but in California and Arkansas 12 per cent. petitions suffice to order a recall election in the case of an officer elected in the state at large.

(3) There are several modes in which the recall may be conducted. The name of the officer against whom the petition is filed may be placed upon the official ballot at the special election, together with those of other candidates for the office nominated by petition. If the office-holder fails to secure a plurality of all votes cast, he is thereby recalled and the candidate receiving a plurality is declared his successor. This is the method adopted in Oregon in 1908. Or the recall election proper may be preceded by a special primary, at which two candidates are selected to compete for the office in question at an ensuing election. If the office-holder fails to be renominated at the primary he is thereby recalled. This is the method commonly used in municipal recall elections, but has not been proposed for any state-wide recall. Again, there may be a single election, but a separate vote on the question of recall. In this case the name of the office-holder does not appear as a candidate to succeed himself. Candidates for the succession may be nominated by petition, by a special primary, or by designation of any appropriate party committee recognized by law. If a majority of those voting at the election vote for the recall, the office-holder is removed from office, and the office goes to the candidate with the highest vote. A vote for a successor is void unless the voter votes also on the question of recall, and if the majority vote against recall all votes for a successor are void. This is substantially the method adopted in California in 1911, and is followed in Arkansas and Colorado. The Oregon plan is followed in Arizona, Nevada, and North Dakota. The Idaho and Wisconsin amendments are general in

terms, and leave to the legislature the task of filling in details.

(4) The grounds for the recall, according to the original Oregon plan, are to be set forth at the head of the recall petition. Further official publicity for the charges is provided by reservation of space on the ballot for a statement by the petitioners in not more than 200 words. The office-holder against whom the charges are brought may set forth his defense in a similar statement on the ballot. Furthermore, the legislature is authorized to provide some compensation to the office-holder for the expense of his campaign should he not be recalled. Similar provisions are contained in most of the later recall amendments. In general the machinery of the recall adopted in California, and followed in the amendments submitted under the initiative in Arkansas and Colorado, seems an improvement over the machinery of the original Oregon plan.

Extension of the Recall to Federal Officers.—In Arizona the legislature of 1912 provided for the extension of the recall to United States senators, congressmen, and the United States judge for the Arizona district. As all of these officers hold their positions under the federal constitution, and as the federal judge is not even elected by the people of Arizona, the recall cannot be applied to them by the ordinary process of an amendment to the state constitution. Consequently what may be termed the advisory recall of United States senators and congressmen and the advisory resignation and appointment of federal judge were established by statute. The advisory recall of United States senators and congressmen and the advisory resignation of federal judge were doubtless suggested by corresponding constitutional provisions for the mandatory recall of state officers, including the judiciary. The advisory appointment of federal judge was apparently established upon the theory that the President, in the selection of local judicial appointees, customarily enjoys the benefit of advice from some representative of the locality concerned, generally the United States senator, if of the same party. Why not sub-

stitute the people of the state for the senator as the source of the advice? The Arizona law, therefore, provides for an advisory vote to indicate the popular choice of a candidate for a judicial appointment, as well as to indicate the popular desire for the resignation of a United States district judge.

The procedure for the advisory resignation of federal judge and for the popular indorsement of a candidate for the succession is substantially the same as that established under the California plan for the recall of state officers. The ballot provides for votes on two separate questions: (1) Shall the federal judge be advised by the people to resign? and (2) Which candidate for the succession shall be recommended to the President for appointment? Both federal judge and President are, of course, free to follow or disregard this advice, as they please. The advisory recall of United States senators and congressmen is conducted in the same way as the mandatory recall of state elective officers, except that an adverse vote cannot be enforced by any legal process within the control of the state. In order to make this advisory recall effective, the principle of the Oregon plan for the popular election of United States senators is adapted to the occasion. Candidates for United States senatorial and congressional nominations are given the option of pledging themselves to obey or not to obey an advisory vote of recall. A candidate for a nomination at a direct-primary election would find it to his advantage to make the pledge of obedience. This Arizona plan for the extension of the recall to congressmen is an innovation, but its application to United States senators is simply a revival in more effective form of the recall of senators practiced by the state legislatures under the name of "doctrine of instruction of senators" throughout the first half-century of the federal Government. Among a number of less well-known instances of the recall of senators, the recall of two who later became Presidents of the United States may be mentioned: John Quincy Adams, of Massachusetts, in 1808, and John Tyler, of Virginia, in 1836.

Recall of Judicial Decisions.—The recall of judicial decisions is a device first suggested by Theodore Roosevelt in an address before the Ohio Constitutional Convention, Feb. 21, 1912. Its purpose may best be explained in the language of its first public sponsor. In his speech to the Progressive National Convention at Chicago in August Mr. Roosevelt said:

In dealing with the fundamental law of the land, in assuming finally to interpret it, and therefore finally to make it, the acts of the courts should be subject to, and not above, the final control of the people as a whole. . . . The people themselves must be the ultimate makers of their own Constitution, and where their agents differ in their interpretations of the Constitution the people themselves should be given the chance, after full and deliberate judgment, authoritatively to settle what interpretation it is that their representatives shall thereafter adopt as binding.

Whenever in our constitutional system of government there exist general prohibitions that, as interpreted by the courts, nullify, or may be used to nullify, specific laws passed, and admittedly passed, in the interest of social justice, we are for such immediate law or amendment to the Constitution, if that be necessary, as will thereafter permit a reference to the people of the public effect of such decision under forms securing full deliberation, to the end that the specific act of the legislative branch of the government thus judicially nullified, and such amendments thereof as come within its scope and purpose, may constitutionally be excepted by vote of the people from the general prohibitions, the same as if that par-

ticular act had been expressly excepted when the prohibition was adopted. This will necessitate the establishment of machinery for making much easier of amendment both the National and the several State Constitutions, especially with the view of prompt action on certain judicial decisions—action as specific and limited as that taken by the passage of the eleventh amendment to the National Constitution.

It is pointed out by the advocates of the recall of judicial decisions that the Dred Scott decision of 1857 was, in effect, recalled by Section I of the Fourteenth Amendment, adopted in 1868, and that the income-tax decision of 1895 is now in process of recall by a pending amendment. Mr. Roosevelt's proposal is to expedite such recalls whenever they are clearly demanded by public opinion. (See also I, *American History*.)

An amendment to the state constitution, restricting the right to declare laws unconstitutional to the supreme court, and providing a more direct process by which nullified statutes may be constitutionalized, so to say, was submitted under the initiative in November to the people of Colorado and adopted by them by a vote of 55,416 to 40,891. This amendment virtually authorizes the people by the use of the referendum to order the enforcement of a statute which has been enacted by the legislature and approved by the governor but vetoed by the supreme court.

THE SHORT BALLOT

Adoption in 1912.—The short ballot (see *AMERICAN YEAR BOOK*, 1910, p. 156; 1911, p. 187) was indorsed during 1912 by all three of the leading candidates for the presidency. The New Hampshire and Ohio constitutional conventions, however, failed to submit to the people any proposals for the shortening of the ballot in those two states. In the state of Oregon the People's Power League (see *AMERICAN YEAR BOOK*, 1910, p. 153) submitted under the initiative at the November election a plan for the entire reorganization of the legislative branch of the state

government, and one of the leading features of this plan was a shorter ballot.

The Oregon Plan.—This latest "Oregon plan" provides for the abolition of the state senate; deprives the governor of the veto power, and gives him, together with the defeated gubernatorial candidates of all legal parties, a seat in the state house of representatives (which becomes the sole legislative body); gives the governor the exclusive power to introduce appropriation bills, reserving to the legislature the power to reject or reduce pro-

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posed appropriations, but not the power to increase them without the governor's consent (provided that appropriation bills may be submitted to the people even without the approval of the governor); requires a three-fourths vote of the legislature to amend or repeal a measure enacted by the people; establishes a system of proportional representation of the people in the legislature and the proxy system of voting on measures; provides for quadrennial legislatures with annual sessions; provides for the choice of a non-partisan speaker who shall not be a member of the legislature; and regulates legislative procedure. This plan is less comprehensive than that submitted by the People's Power League in 1910. The former plan proposed a reorganization of the legislature along lines similar to those of the plan of 1912, and also a reorganization of the executive by a removal of all state officers from the ballot except governor and auditor, and the establishment of an executive cabinet to be appointed by the governor and responsible to him, and by the creation of the new office of state business manager, to be filled by appointment by the governor without regard to party affiliation. Furthermore, by the plan of 1910, the principle of the short ballot and administration by non-political "business managers" under the supervision of political boards was to be extended also to the government of counties. After this plan was rejected by the people, the People's Power League attempted to revise it in order to meet the most serious objections that had been brought against it. This revised plan may be found in an "introductory letter" published by the People's Power League Dec. 28, 1911. Subsequently those portions of the plan relating to the state executive and to the county were laid aside, in order that the attention of the voters in 1912 might be concentrated upon the proposed scheme of legislative reorganization.

The advantages of this radical reorganization of the legislative branch of the state government are thus set forth in the affirmative argument

published in the official state publicity pamphlet for the election of 1912: (1) A reduction of the expenses of the state government estimated at over 25 per cent.; (2) concentration of legislative responsibility by the abolition of the "useless and unnecessary" senate and of the gubernatorial veto power; (3) increase of popular control over the legislature through the referendum; (4) representation of all political parties in proportion to their numerical importance; (5) decrease of the quantity of legislation, both by the legislature and by the people. On the other hand, in the negative argument printed in the publicity pamphlet we find a general denial that the proposed reorganization of the legislature will, if adopted by the people, either decrease the burden of taxation or diminish the use of the initiative and referendum. The measure is bluntly characterized as a "crude experiment." It was defeated by the people at the November election.

Proportional Representation.—The proxy system of proportional representation differs from that proposed by the People's Power League in 1910, and merits further explanation. The plan proposed in 1912 provides that the legislative assembly shall consist of 60 elective members and certain *ex officio* members. Elective members are to be chosen in such a way that as nearly as may be practicable any one-sixtieth of the voters in the state voting for the same person for representative shall insure his election. The legislative assembly is required to divide the state into legislative districts, no one of which shall be entitled to less than two representatives, nor is any county to be divided in making such districts. A voter may vote for a candidate nominated in his district or may write in on his ballot the name of a candidate nominated in another district, but no voter may vote for more than one candidate. In each district the two or more candidates, as the case may be, receiving the largest number of votes shall be thereby elected. Each representative so elected is the proxy in the leg-

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islative assembly for all the voters who voted for him, and in voting therein shall cast the number of votes he so represents. But this islative assembly for all the voters who have voted for unsuccessful legislative candidates. It is therefore provided further that the governor and the leading gubernatorial candidate of each defeated legal party shall also be members of the legislative assembly, and each such *ex officio* member of the assembly shall be a proxy for all those voters, in whatsoever district they may reside, who voted for unsuccessful candidates of his party for representative, and shall cast a corresponding number of votes for or against any measure brought before the assembly.

This proxy system of proportional representation obviously gives a great deal of power to regular party candidates for governor, whether elected or defeated, and was criticized on that ground in the negative argument printed in the Oregon publicity pamphlet for 1912. In order to insure that this power should not fall into the hands of any but the most representative party leaders, the original proposals of the People's Power League provided for a system of preferential voting for governor. Although this part of the plan was not submitted to the voters in 1912, the increasing interest in preferential voting, indicated by the adoption of various plans therefor in several of the states, calls for a more extended discussion of the subject.

Preferential Voting.—The Oregon plan for preferential voting provided for a ballot upon which the voter might indicate not only his first, but also his second and other, choices for each of the two offices (governor and auditor) to be filled by election in the state at large. There was to be no official primary election, but several candidates representing each party might seek election under the preferential voting system. If no candidate should receive a clear majority of all the first-choice votes, the second-choice votes for each candidate should be added to his first-choice votes; and, if no candidate

then received a first- or second-choice vote from a majority of the voters attending the election, the other choice votes for each candidate should be added to the previous totals. The candidate with a plurality of all choices added together should then be declared elected. A similar system, providing, however, for the counting of first and second choices only, was introduced in the Idaho direct-primary law of 1909, but in most of the states which have adopted preferential voting another system has been employed which may be named, from the state in which it was first proposed, the Wisconsin plan.

The Wisconsin plan was adopted, not in order to dispense with a direct primary as proposed in Oregon, but to prevent the capture of primary nominations by minority factions within the party. This was also the purpose of the Idaho plan. The Wisconsin plan provides for the counting of first and second choices only, but by a different method from that adopted in Idaho. If no candidate for a given nomination receives a majority of the first-choice votes, that candidate who receives the least number of such votes is eliminated, and the second choices indicated on the ballots marked in the first-choice column for the eliminated candidate are then added to the appropriate first-choice votes of the remaining candidates. This process of elimination of lowest candidates and redistribution of ballots is continued until some candidate receives a first- or second-choice vote from a majority of the voters, or until only two candidates remain. In the latter event the candidate with a plurality of first- and second-choice votes is to be declared elected. Neither method of preferential voting insures the election of a candidate by a majority of all votes cast, but both methods prevent the candidate of a minority faction within a party from winning a nomination through the division of the majority of the party among several candidates of similar principles.

The Idaho plan possesses the obvious advantage of greater simplicity in the counting of the ballots.

Under this plan, however, the voter's second choice will be counted against his first choice in the event of there being no majority of first choices for any one candidate, and may aid in defeating his first choice. If the voter seeks to avoid this danger by voting a first choice only, he thereby partially disfranchises himself, and thus different voters may exercise an unequal voice in the election. The Wisconsin plan avoids these difficulties, and thereby secures greater accuracy in the expression of the popular will, although at the partial sacrifice of the simplicity of the Idaho plan. Where only first and second choices are indicated, the complexity of the Wisconsin plan is

not serious, and without doubt it is the superior plan for primary elections. If it be proposed to abolish the primary and establish preferential voting at the general election as a substitute, as was contemplated in Oregon, it becomes desirable to afford the means of expressing more than two choices. In this case the complexity of the Wisconsin plan would become more serious.

The Wisconsin plan was adopted in that state in 1911, and in 1912 in Minnesota. It was also adopted in Arizona in connection with the advisory recall of United States senators and congressmen and the advisory resignation and endorsement of federal judges.

PUBLICITY IN POLITICAL CAMPAIGNS

Publicity of Campaign Funds.—There was little new legislation in 1912 in connection with corrupt practices at elections and the publication of campaign receipts and expenditures, but there was a great increase of public knowledge of the results of earlier legislation, or the lack of it. The most important piece of legislation upon this subject in 1912 was the enactment in Minnesota of a law modeled upon that enacted in Wisconsin in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 189-190). The new state of Arizona also adopted a comprehensive law, prohibiting campaign contributions by corporations and providing for full publicity of all receipts and expenditures before and after primaries and elections. Connecticut strengthened the publicity features of its law; Louisiana, Maryland, and Virginia strengthened their laws with especial reference to primary elections; and New Mexico was added to the list of states with corrupt-practices legislation upon their statute books. In Montana a comprehensive measure was submitted to the people in November under the initiative, as a substitute for the antiquated law of 1895. Altogether 40 states have now enacted more or less comprehensive legislation to regulate the use of money in elections.

Congress enacted a law providing for publicity and limitation of re-

ceipts and expenditures in presidential primary elections, but too late to affect the presidential primaries of 1912.

Official Campaign Publicity Pamphlets.—The most significant feature of recent legislation regulating the conduct of political campaigns is the increasing provision for the publication of campaign material by the states. This feature originated in the publicity pamphlet provided in Oregon for the better information of the voters concerning measures submitted to the people under the initiative and referendum (see *AMERICAN YEAR BOOK*, 1910, p. 151). The Oregon system of official publicity immediately demonstrated its value, and the "Voters' Text-Book," as it is often called, was adopted in other states possessing the initiative and referendum, notably in Montana, California, and Arizona. The Oregon "Voters' Text-Book" has been published biennially since 1904, and in the other three states publication began in 1912. The direct-legislation amendment adopted in Washington in 1912 makes mandatory upon the legislature the establishment of an effective system of official publicity, and a similar provision is contained in the amendment endorsed by the Wisconsin legislature of 1911. In South Dakota the legislature originally provided for the distribution of sample bal-

lots on which proposed amendments were printed in full. This plan resulted in 1910 in a six-foot ballot, and in 1911 the legislature provided for the printing of titles of measures only on the ballots and for the distribution of official pamphlets containing the full texts, together with affirmative and negative arguments, as in Oregon. In Missouri, Arkansas, and Colorado, after the adoption of the initiative and referendum, the legislatures provided for the publication of proposed measures in newspapers of each party in each county as official advertising. This method has proved less effective than the Oregon official pamphlet and much more expensive. In Colorado a measure abolishing compulsory newspaper advertising and establishing the official "Voters' Text-Book," with provision for arguments *pro* and *con.*, as in Oregon, was submitted to the people under the initiative in 1912, but was de-

feated by a vote of 39,551 for, to 50,635 against.

The principle of the publicity pamphlet was next extended to the primary election for the better information of voters concerning candidates. The Oregon primary election pamphlet was first published in 1910 (see *AMERICAN YEAR BOOK*, 1910, p. 151), and was introduced into Wisconsin in 1911. In Montana a measure submitted to the people under the initiative in 1912 provided for two official campaign bulletins, one to appear before the primary, the other before the general election; and in Massachusetts it was proposed in 1912, but not adopted by the legislature, to publish an official bulletin once a week for the four weeks preceding each general election, in which space should be available at cost of publication to parties and candidates for the discussion of the issues of the campaign.

WOMAN SUFFRAGE

Endorsement by the Progressive Party.—The cause of "votes for women" has made more progress during 1912 than during any previous year. Woman suffrage was endorsed generally by the Progressive party, and in some states all three of the leading parties either endorsed equal suffrage for men and women or recommended the submission of the question to the people.

The total number of states in which equal suffrage was submitted to the voters in 1912 was six, namely: Arizona, Kansas, Michigan, Ohio, Oregon, and Wisconsin. In Nevada, where equal suffrage was endorsed by the legislature of 1911, a second endorsement must be obtained from the

legislature of 1913 before the measure can be submitted to the people. A constitutional convention in New Hampshire rejected a proposed woman suffrage amendment. A proposed amendment in Ohio was rejected by the voters on Sept. 3 by a vote of 249,420 to 336,875. On Nov. 5 equal suffrage was adopted in Arizona, Kansas, and Oregon, and rejected in Michigan and Wisconsin. In Michigan the official returns showed a majority of 760 against equal suffrage, but have been challenged on the ground of fraud. The total number of equal suffrage states at the close of 1912 is therefore nine, with one additional state, Michigan, in doubt.

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III. INTERNATIONAL RELATIONS

PHILIP MARSHALL BROWN

NORTH AMERICA

CANADA

Reciprocity with the United States.

—The cause of reciprocity between Canada and the United States (see *AMERICAN YEAR BOOK*, 1911, pp. 45-48, 90-93, 123, 291, 483, 510) received an unexpected blow during the presidential-primary campaign in Massachusetts (see also I, *American History*), when President Taft in a speech at Worcester, on April 25th, gave out to the public private correspondence with Mr. Roosevelt showing that the latter had reversed his attitude toward reciprocity. The unfortunate phrase which caused all the trouble, to the effect that the proposed reciprocity agreement would make Canada "only an adjunct of the United States," was contained in a letter written by President Taft to Mr. Roosevelt. This phrase was immediately seized upon by the Conservatives in Canada as an authoritative corroboration of their accusations against the Liberal Government in the Canadian political campaign of 1911. The incident was made the occasion for an interpellation of the British Government in the House of Commons on May 6, an attempt being made to discredit the Liberal Government of England for its failure properly to safeguard the interests of the Empire. Mr. Bryce, the British Ambassador in Washington, came in for severe criticism in this connection. The effect of this incident in strengthening the position of the Conservative party in Canada, and discrediting temporarily the Liberal party, has undoubtedly been to postpone indefinitely the pos-

sibility of any reciprocal agreement regarding trade between Canada and the United States.

Canadian Wood-pulp.—Meanwhile the Reciprocity Act passed by Congress on July 26, 1911, remains unrepealed, and Section 2 in particular, admitting Canadian wood pulp and print paper free of duty, continues in active operation without reference to any action on the part of Canada. Inasmuch as this benefit was conferred on Canada without the giving of any consideration in return, other nations have claimed that it constitutes a discrimination against wood pulp and print paper exported by them to the United States. President Taft, in a message to Congress dated Jan. 9, 1912, stated that Germany, Austria, Belgium, Norway, Sweden and Denmark had all claimed, under the most-favored-nation clause of their treaties with the United States, the right to the benefit conferred on Canadian wood pulp and print paper. On April 23, the Board of General Appraisers decided that as Canada is not a country or nation for the purposes of international law, the most-favored-nation clause is not therefore brought into operation. The logic of this decision was not entirely convincing, and an appeal was taken to the Customs Court. In order apparently to save the United States Government further embarrassment, that tribunal, on Oct. 25, granted an application for an indefinite postponement of the case.

International Joint Boundary Commission.—The International Joint Commission of Canada and the United States provided for in the

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Boundary Convention of Jan. 11, 1909, met and organized in Washington, Jan. 11-18, 1912. The American members of the Commission are: Hon. James A. Tawney (chairman), Hon. George Turner, and Mr. Frank S. Streeter. The Canadian members are: the Hon. T. Chase Casgrain, Hon. Henry A. Powell, and Hon. Charles A. McGrath.

The powers of the Commission as determined by Articles IX and X of the Boundary Convention of 1909 are as follows:

Any other questions [that is to say, other than the immediate boundary disputes] or matters of difference arising between them [viz., Canada and the United States] involving the rights, obligations or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred.

Such reports of the commission shall not be regarded as decisions of the questions or matters so submitted either on the facts or the law, and shall in no way have the character of an arbitral award.

Any questions or matters of difference arising between the high contracting parties involving the rights, obligations or interests of the United States or of the Dominion of Canada, either in relation to each other or to their respective inhabitants, may be referred for decision to the International Joint Commission by the consent of the two parties, it being understood that on the part of the United States any such action will be by and with the advice and consent of the Senate, and on the part of His Majesty's Government with the consent of the Governor-General in Council.

It will thus be seen, as pointed out by Mr. Commissioner Tawney in the opening address at the first meeting of the Commission, that:

This treaty has provided a means for frank, direct and constant relations between the two great neighboring peoples who inhabit the greater part of the North American continent, and who must live in amicable relations to real-

ize the ultimate ideal of our Anglo-Saxon civilization.

The main questions awaiting consideration by the Commission relate to the proposed dam across the St. Lawrence River; to Lake Champlain; the St. Lawrence Ship Canal Co., and the Long Sault Development Co. (See *Am. Journal of International Law*, Vol. VI, p. 191.)

North Atlantic Fisheries.—It was announced on May 24, 1912, that new agreements had been entered into by the United States, Canada, and Newfoundland to adjust certain questions relating to American fishing rights as determined by the award of The Hague Arbitration Tribunal in 1909 (*AMERICAN YEAR BOOK*, 1910, p. 100). The final draft of the treaty was formally signed Nov. 15 by Ambassador Bryce and Secretary Knox. The principal provision of the new fishery treaty is that relating to the adoption of new regulations affecting the rights of American fishermen. Six months' notice of intended changes in the regulations must be given in order to allow the United States opportunity to object if it so desires, and have its objections passed upon by an impartial commission. Another provision of the treaty relates to the delimitation of bays more than 10 miles in width in accordance with the recommendation of the award of The Hague Tribunal in 1909. It was not found possible to complete the delimitation of the Newfoundland bays in time for the signing of the treaty. This, together with other questions, will be left to subsequent negotiations.

MEXICO

Revolutions.—The continued revolutionary uprisings and general state of insecurity which has prevailed in Mexico since the commencement of the successful revolution by Madero in 1911 (*AMERICAN YEAR BOOK*, 1911, 74, 88-90, 115) have caused the United States serious embarrassment and grave concern. The activities of the Mexican revolutionists in the proximity of the American border have imposed on the United States the well-nigh impossible task of preventing American soil

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from being used as a base of supplies and action by the revolutionists against a Government with which the United States is at peace. (See also IV, *Mexico*.)

The problem has been, how to prevent, under American neutrality laws, the participation of American citizens and others, either directly or indirectly, in this attempt to overthrow the existing legal government in Mexico. To accomplish this end it has been found necessary to amend the neutrality laws of the United States and to maintain on the Mexican border an imposing military patrol to prevent infractions of these laws. It has likewise been the constant preoccupation of the United States to secure the adequate protection of American citizens and their property without going to the extreme of intervention, which, as President Madero has well said, "is only an euphemism that spells war." Enormous pressure was brought to bear on the Administration by very powerful interests having investments in Mexico to force the United States to intervene, but President Taft steadfastly refused to take so extreme and dangerous a step.

On Feb. 3 the United States Government through the embassy in Mexico City warned the Government of President Madero that it would be expected to afford the fullest protection to American lives and property from the excesses and ravages of the rebels. At the same time a considerable number of American troops were sent to patrol the border. To allay Mexican fears of intervention and avert any possible reprisals on American citizens by irresponsible individuals hostile to the United States, the Department of State instructed American officials throughout Mexico, on Feb. 13, to deny publicly that the United States had any intention of intervening in Mexican affairs. These assurances were repeated from time to time during the year.

On March 2 President Taft issued a proclamation recognizing the status of active insurrection in Mexico and enjoining all American citizens and others from taking part in support of the rebellion. The purpose

and the effect of this proclamation from the point of view of international law was merely to recognize the existence of war in the material sense, namely the status of the Mexican rebels as insurgents and the corresponding obligation of the United States to enforce its own neutrality laws. It did not recognize war in the legal sense, namely a status of belligerency, and therefore did not bring into operation the obligations of neutrality imposed by international law. The American Government has made plain that it has never intended to concede to the Mexican revolutionists any belligerent rights, such as the free use of American ports on an equality with the Mexican Government.

At the time of the issuance of this proclamation American citizens living within the zone of operations of the revolutionists were warned through the embassy in Mexico City and the consuls throughout the country that they should withdraw and leave their effects in the hands of the nearest consular officials.

It was found that the neutrality laws of the United States were insufficient to prevent certain acts of substantial aid to the revolutionists. Congress, therefore, on March 14, 1912, by joint resolution, conferred on the President the discretion and the power to prohibit the shipment of arms and munitions of war from the United States to any American country where domestic violence may be forwarded by the use of arms and munitions so procured.

In pursuance of the authority thus conferred on him, President Taft issued the following proclamation:

Whereas a joint resolution of Congress approved March 14, 1912, reads and provides as follows: That whenever the President shall find that in any American country conditions of domestic violence exist which are promoted by the use of arms or munitions of war procured from the United States and shall make proclamation thereof it shall be unlawful to export except under such limitations and exceptions as the President shall prescribe any arms or munitions of war from any place in the United States to such country until otherwise ordered by the President or by Congress, and

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Whereas it is provided by section 2 of the said joint resolution: That any shipment of material hereby declared unlawful after such a proclamation shall be punishable by fine not exceeding \$10,000 or imprisonment not exceeding two years or both;

I, William Howard Taft, President of the United States of America, acting under and by virtue of the authority conferred in me by the said joint resolution of Congress, do hereby declare and proclaim that I have found there exist in Mexico such conditions of domestic violence promoted by the use of arms or munitions of war procured from the United States, as contemplated by the said joint resolution, and I do hereby admonish all citizens of the United States and every person to abstain from every violation of the provisions of the joint resolution above set forth, hereby made applicable to Mexico and I do hereby warn them that all violations of such provisions will be rigorously prosecuted.

On March 24 the Department of State announced, in accordance with the rules of international law regarding insurgency, that the Mexican Government was in no way prevented by the terms of the President's proclamation of March 14 from importing arms and ammunition from the United States. On March 29, owing to the presence of roving bands of revolutionists in the neighborhood of the capital of Mexico, one thousand rifles were shipped with the permission of the Mexican Government, for the use in case of need of the Americans living in Mexico City.

The United States Government became seriously alarmed because of the cruel treatment of Americans captured by revolutionary bands, and particularly by the attitude of General Oroasco, the chief of the rebels operating in the state of Chihuahua. General Oroasco on April 12 seized mail addressed to the United States consul at Chihuahua, and announced that he declined to recognize Consul Letcher because of the failure of the American Government to recognize the revolutionists. The Department of State thereupon sent to both President Madero and General Oroasco a solemn warning through Ambassador Wilson and Consul Letcher respectively, in part as follows:

The enormous destruction, constantly increasing, of valuable American prop-

erties in the course of the present unfortunate disturbances; the taking of American life contrary to the principles governing dangers to which all American citizens in Mexico are subjected; and the seemingly possible indefinite continuance of this unfortunate situation, compel the government of the United States to give notice that it expects and must demand that American life and property within the republic of Mexico be justly and adequately protected and that this government must hold Mexico and the Mexican people responsible for all wanton or illegal acts sacrificing or endangering American life or damaging American property or interests there situated.

The government of the United States must insist in so far as the treatment of American citizens taken prisoners by whatever force is concerned, that the rules and principles accepted by civilized nations as controlling their actions in time of war shall be followed and observed, and the government of the United States must give notice that any deviation from such a course, and, indeed, any maltreatment of any American citizens will be deeply resented by the American government and people, and must be fully answered for by the Mexican people, thus tending to difficulties and obligations which it is to the interest of all true Mexican patriots, as it is the desire of the United States to avoid.

The effect of this communication on General Oroasco was to induce him to agree to treat Consul Letcher with the respect due his position, and also to conduct military operations in accordance with the principles of international law.

The Mexican Government was greatly offended by the nature of the warning from the Department of State, and issued an indignant denial of the right of the United States to address such a communication to Mexico. The Minister for Foreign Affairs, Señor Calero, made public on April 17 the official reply of his Government to the American note of April 14. The substantial portion of this reply was as follows:

The Mexican Government finds itself in the painful necessity of not recognizing the right of your Government to make the admonition which the note contains, for the reason that it is not based on any incident that should be chargeable to the Mexican Government and which could signify that it might

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have departed from an observance of the principles and practices of international law.

In view of the fact that a part of the country is in a state of rebellion, the Mexican Government has as its principal duty the suppression of the rebellious movement, and the legitimate Government of the republic will not be obligated in this respect except in the same terms as would the Government of the United States or any other country if a rebellion existed in its own territory.

The Mexican Government cannot be responsible for the acts of the rebel Orozco along the lines laid down in the communication which was sent to him by order of your Government.

The situation along the Pacific coast of Mexico became so disquieting that it was deemed necessary to despatch the U. S. S. *Yorktown* to visit the various ports. Owing, however, to the apprehension that the presence of an American gunboat might provoke reprisals against Americans throughout Mexico, it was announced on May 9 that the order had been countermanded.

Early in August the attitude of the revolutionists toward all Americans became so threatening that the Department of State felt compelled to send further warnings to Generals Orozco and Salazar, and at the same time urged President Madero to rush more troops into the district occupied by the insurgents to afford greater protection to Americans.

On Sept. 13 permission was given to the Mexican Government to send troops over American soil from El Paso to Marathona for the purpose of protecting Americans from depredations by insurgents on the border. This permission was granted in consequence of a mutual agreement whereby Mexico conceded the right of the United States in case of necessity to send troops over the border into Mexico in order to prevent violation of American laws or threatened danger to American lives and property, in connection with revolutionary operations along the border.

Magdalena Bay.—It has long been apparent that the magnificent Bay of Magdalena in Southern California, Mexico, offers an ideal naval base, either for the United States, which has been allowed to use these waters

for naval maneuvers and gun practice, or for an enemy of the United States in time of war. Early in 1912 there were persistent rumors to the effect that secret negotiations were under way to enable Japan indirectly to secure a foothold on the shores adjoining Magdalena Bay. Senator Lodge, of Massachusetts, introduced a resolution in the Senate on April 2, which was adopted, calling on the President for information as to the truth of these reports.

On April 5 the Japanese Prime Minister, Marquis Saionji, in a public statement given to the press, denied that Japan was negotiating for land on Magdalena Bay, though admitting that the Oriental Whaling Co., of Japan, had acquired fishing rights in common with the citizens of other countries on the mainland of Mexico far to the south of Magdalena Bay along a strip of coast about 750 miles long, lying between the states of Tepic and Oaxaca.

On April 11 John Blackmer, of New York, stated in the course of a newspaper interview that an American company in which he was interested had been negotiating with a private Japanese company for the sale of lands for purposes of settlement, belonging to the American company, and bordering on Magdalena Bay. Mr. Blackmer also asserted that the Government was aware of these negotiations.

It seems that the Chartered Company of Lower California, a Maine corporation which fell into financial straits, owned a 350-mile strip of land which included Magdalena Bay. To be able to meet its creditors, this company entered into negotiations to sell this land to a new private company whose stock would be held by the Oriental Steamship Co., a corporation subsidized by the Japanese Government. There was reason to believe that this land could be of no other valuable use to the Japanese than for strategic reasons.

President Taft transmitted to the Senate on May 1 a report from Secretary of State Knox stating that:

There is nothing on file in the Department of State that has justified any inference that the Mexican Government or the Imperial Japanese Government

has been occupied with any disposition of land near Magdalena Bay by which the latter Government would acquire land there for any purpose. . . . His Excellency the Japanese Ambassador . . . made with his Government's authorization and merely for the information of the Department of State an unreserved and categorical denial of the rumored purchase of land at Magdalena Bay by the Imperial Japanese Government or by a Japanese company.

In a subsequent message to the Senate, dated May 30, President Taft announced that the United States Government would not approve of the sale of the tract of land in question to a Japanese company. The United States Senate was unwilling, however, to allow the matter to rest in this form, and on July 31 adopted the following resolution, which has been generally recognized as a considerable extension of the Monroe Doctrine:

Resolved, that when any harbor or other place in the American continents is so situated that the occupation thereof for naval or military purposes might threaten the communications or the safety of the United States, the Government of the United States could not see without grave concern the possession of such harbor or other place by any corporation or association which has such a relation to another Government, not American, as to give that Government practical power or control for national purposes.

CUBA

Cuban affairs caused the United States considerable concern during the year 1912, to such an extent that on three distinct occasions it seemed as if intervention were an immediate possibility. (See also IV, *Cuba*.)

Cuban Veterans' Agitation.—The first occasion was in January, at the time of the threatening agitation of the Association of Veterans of the War for Cuban Independence against the Cuban Government. The Association first demanded the dismissal from public office of all who had been in any way identified with the Spanish *régime* in the island, and the appointment in their places of members of the Association. In spite of the decree of President Gomez calling their attention to the law forbidding any army officers or *rurales*

(country police) from taking part in politics, many of these officials began to join in the agitation of the Association against the Government.

The situation became so threatening to peace and order that the United States Government felt compelled to issue, on Jan. 16, a vigorous warning, in pursuance of Article II of the treaty of 1904 with Cuba, whereby the latter agreed that the United States might intervene for "the maintenance of a government adequate for the protection of life, property and individual liberty. . . ." Minister Beaupré at Havana was instructed to present the following note to the Cuban Government:

The situation in Cuba as now reported causes grave concern to the Government of the United States.

That the laws intended to safeguard free republican government shall be enforced and not defied is obviously essential to the maintenance of the law, order and stability indispensable to the status of the Republic of Cuba, in the continued wellbeing of which the United States has always evinced and cannot escape a vital interest.

The President of the United States, therefore, looks to the President and Government of Cuba to prevent a threatened situation which would compel the Government of the United States, much against its desires, to consider what measures it must take in pursuance of the obligations of its relations to Cuba.

The effect of this note in strengthening the hands of President Gomez and in compelling the Association of Veterans to desist from their threatening attitude was immediate and most salutary. What promised to prove a serious crisis was thus happily averted by the firm and prompt action of the American Government.

Negro Uprising.—The second occasion to cause the United States grave concern was the uprising of negroes in the eastern part of Cuba in protest against the failure of the Government to recognize politically the negroes in proportion to their numbers throughout the island. They particularly protested against a law known as the Morua law which prohibited recognition of political parties on racial lines.

The principal events were as follows. The first uprising was re-

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ported on May 19, at a place called Sagua La Grande, in the Province of El Oriente. In a short period of time the negroes banded together in considerable numbers under two Generals of their race named Estenoz and Ivonnet. The town of El Caney in the neighborhood of Santiago was looted. The Spanish-American Iron Co., at Daiquiri, was attacked, and it was even thought possible that the American naval station at Guantanamo might also suffer some depredation. The foreign consuls in Santiago were notified by one of the negro chieftains that all foreigners who did not leave within 24 hours would be executed.

President Taft sent 700 marines on the transport *Prairie*, May 23, to protect American interests in eastern Cuba, and on May 25 ordered a concentration of American warships at Key West. In response to a protest from President Gomez against possible intervention, President Taft, in order to allay any fears in that respect, sent to President Gomez the following message, on May 27:

I am sincerely gratified to learn of your Government's energetic measures to put down the disturbance, and to know that you are confident of being successful. As was fully explained to the Cuban Chargé d'Affaires here, this Government's motive in sending ships to Key West, just as sending the *Prairie* to the Guantanamo naval station, was merely to be able to act promptly in case it should unfortunately become necessary to protect American life and property by rendering naval support or assistance to the Cuban Government. As was made quite clear at the time, these ordinary measures of protection were entirely dissociated from any question of intervention.

On June 6, however, the United States Government warned President Gomez that failure to protect the lives and property of Americans and other foreigners would induce intervention. On June 9 two warships were despatched to Havana because of the serious situation created by the violent race riots in that place. The death of General Estenoz, the leading spirit of the negro rebellion, was reported on June 27, and by July 10 it was evident that the revolt had been entirely suppressed.

Cuban Elections.—The third occasion on which intervention seemed a possibility was during the elections in October, when party feelings ran so high that it seemed at one moment as if it would be necessary for the United States to land troops in order to guarantee free and orderly elections. Fortunately the political factions were made to realize the seriousness of the situation, and the elections on Nov. 2 took place without violence, resulting in the choice of General Mario Menocal and Enrique Jose Varona, candidates for the Presidency and the Vice-Presidency, respectively, on the Conservative ticket. (See also IV, *Cuba*.)

Cuba and Europe.—The diplomatic relations of Cuba with England, France, and Germany have for some time been considerably strained over the unwillingness of the Cuban Government to pay certain claims arising during the insurrections in Cuba under the Spanish *régime*. Cuba has expressed its willingness to make compensation in all cases where receipts were given by the competent revolutionary chiefs, and also to submit to arbitration some of the other claims. The diplomatic relations of Cuba and France became particularly strained owing to the attitude of the French Bourse toward the Cuban Territorial Bank and the scepticism manifested by the French Government regarding the financial credit of Cuba. At one moment the Government of President Gomez threatened to suspend postal relations and also to resort to tariff reprisals. It is understood, however, that the questions at issue between Cuba and France, England, and Germany are to be amicably settled through diplomatic negotiations.

DOMINICAN REPUBLIC

The Revolution.—The interference of Dominican revolutionists with certain of the customs houses of Santo Domingo, whose receipts have been collected under the supervision of American officials in accordance with the treaty agreement of 1905 for the refunding of the national debt, brought about the partial intervention of the United States. On Sept.

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24 President Taft ordered a special commission and a battalion of marines to be despatched on the transport *Prairie* to the Dominican-Haitian border, where conditions were particularly disquieting. The commissioners were Brigadier-General Frank McIntyre, Chief of the Bureau of Insular Affairs in the War Department, and William T. S. Doyle, Chief of the Division of Latin-American Affairs of the State Department. Their mission was directed principally to mediate between the government and the revolutionists, in order to ensure the orderly collection of the customs receipts.

The reasons for this action were set forth in the instructions cabled by the Department of State on Sept. 24 to the American Minister to the Dominican Republic and Haiti, reading as follows:

In view of its treaty relations to the Dominican Republic and to the collection of customs on the Dominican frontier, and in view of its position as mediator between the Dominican Republic and the Republic of Haiti regarding their boundary dispute, the Government of the United States has determined to

regard as the provisional *de facto* boundary line between the two republics, without prejudice to the rights or obligations of either country and until a final settlement of the boundary controversy may be concluded, the line shown on the "map of Haiti and Santo Domingo prepared by the second military information division, General Staff, Washington, 1907 and 1908, on Monte Christi, Sheet 6, and Barahona, Sheet 7."

In order that customs receipts may be properly safeguarded the War Department will issue instructions to the Receiver-General of Dominican customs to reestablish and operate the border patrol, whose duty it shall be to see that the provisional line thus fixed is meantime respected.

Through the mediation of the American commissioners President Victoria was induced to resign on Nov. 28 and Archbishop Nouel was designated as Provisional President pending the choice of a new President by a general election. On Dec. 19 the rebel leaders, Horacio Vasquez and General Arias, were notified by the American Government that any attempt to oust the Provisional President would be considered as cause for action by the United States.

CENTRAL AMERICA

Visit of Secretary Knox.—Following the precedent established by Mr. Root when Secretary of State, in his memorable visit to South America in 1906, Secretary of State Knox made an official tour of the Latin-American republics of Central America and the Caribbean in March and April, 1912.

Mr. Knox thus expressed the purpose of his mission in his first speech delivered at Panama:

The President of the United States believes that the early completion of the Panama Canal should mark the beginning of closer relations to all Latin America, and especially to the Caribbean littoral, as well as the relations of these countries to each other, and has sent me hither as a bearer of a message of good will to our sister American republics. . . . While it is entirely clear to those who have fairly and intelligently considered the history of the relations of the United States to the other American republics that our policies have been without a trace

of sinister motive or design, craving neither sovereignty nor territory, yet it is true that our motives toward you have not always been fortunately interpreted either at home or faithfully represented by some of our nation who have resided in your midst.

In my judgment, the Monroe Doctrine will reach the acme of its beneficence when it is regarded by the people of the United States as a reason why we should constantly respond to the needs of those of our Latin-American neighbors who may find necessity for our assistance in their progress toward better government or who may seek our aid to meet their just obligations and thereby to maintain honorable relations to the family of nations.

The itinerary followed by Secretary Knox was as follows: Sailing from Key West on the cruiser *Washington*, Feb. 23, Mr. Knox proceeded first to Panama; from thence via Port Limon to San José, the capital of Costa Rica; thence via Punta Arenas on the Pacific coast, to Corinto, Nicaragua, and its capital

Managua; thence to San Salvador, stopping *en route* for an exchange of courtesies with representatives of the Honduran Government at the port of Amapala, which is on an island and unconnected by rail with Tegucigalpa, the capital of Honduras; thence to Guatemala City *via* the port of San José. Leaving Puerto Barrios, the Guatemalan port on the Caribbean, on March 17, Secretary Knox then proceeded to visit in turn Venezuela, Santo Domingo, Haiti, Jamaica, and Havana, arriving at Key West on April 23. A visit to Mexico had been planned, but was omitted owing to the disturbed political conditions.

Mr. Knox was everywhere the recipient of the most elaborate and friendly courtesies, and he expressed in felicitous terms the attitude of the United States toward these republics. The tour was unfortunately marred somewhat by two disagreeable incidents, which, however, were not allowed to assume very much importance. When the journey was announced, Señor Ospina, the Colombian Minister at Washington, took it upon himself to intimate to the Department of State that, in view of the strained diplomatic relations of Colombia and the United States regarding Panama, it would be inopportune for Secretary Knox to include Colombia in his itinerary. The Government of Colombia immediately disavowed the act of its representative, who was recalled, and also announced that Mr. Knox would be invited to visit Colombia. As the Secretary of State, however, did not see fit to include Colombia in his itinerary, a statement was later given out by the Colombian Government to the effect that, while Mr. Knox had not been invited to visit Colombia, he would be welcome if he came.

The other unpleasant incident of this journey occurred during the visit of Secretary Knox in Nicaragua when a large number of the partisans of ex-President Zelaya were put in prison for fear of insult and danger to the person of Mr. Knox on account of the bitterness felt toward him in connection with the events of 1909, at the time of the intervention of the United States resulting in the expulsion of Zelaya from Nicaragua.

HONDURAS

One of the first acts of President Bonilla, on assuming again the office of President of Honduras, was to seize the pier at Puerto Cortes and the railroad connecting that place with San Pedro Salu, both being national property which had been leased to Washington Valentine and other American citizens, whose rights under their lease were alleged by the Government to have been forfeited. American marines were immediately landed for the purpose of resisting this action of the Honduran Government, which in turn proceeded to suspend all traffic on the railroad. The marines were thereupon withdrawn after due notice had been given by the United States Government that Honduras would be held liable for any violations of the rights of Mr. Valentine and his associates.

The Loan Agreement.—The negotiations for the refunding of the foreign debt of Honduras, undertaken by J. P. Morgan and Co., in accordance with the loan convention negotiated with Honduras by Secretary Knox in 1911 (*AMERICAN YEAR BOOK*, 1911, pp. 65, 96-98), were definitely abandoned in February, 1912. The convention, which, together with a similar one negotiated with Nicaragua, had been submitted to the United States Senate, was thereupon recommitted to the Committee on Foreign Affairs. On May 8 it was announced that the Senate committee had declined to recommend the ratification of either convention. (See also IV, *Honduras*.)

Extradition Treaty with the United States.—An event of some importance in the relations of the United States and Honduras was the signing of an extradition convention on July 10, after years of discussion. This leaves no country in the Western Hemisphere in which a fugitive from justice may find asylum.

NICARAGUA

Intervention of the United States.—The armed intervention of the United States undertaken in September at the request of the Government of Nicaragua to assist it to

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maintain peace and order against a formidable insurrection (see also IV, *Nicaragua*) was an event of greatest importance in the development of American policy in Central America. While the United States has for many years acted as friendly mediator between the various republics of Central America, its policy previous to the intervention in question had always been one of scrupulous non-intervention in the internal concerns of these countries. The landing of American marines at Corinto, the military protection and operation of the railroad connecting with Managua, the capital, the actual participation of these marines in the recapture of the important cities of Masaya, Granada, and Leon from the hands of the revolutionists at the sacrifice of several lives, all indicates a radical change of policy on the part of the United States.

The justification of these measures of active intervention is contained in a note presented to the Nicaraguan Government through Minister Weitzel on Sept. 18. As an enunciation of the attitude of the United States not only toward Nicaragua, but also toward all the republics of Central America, this note is of sufficient importance to warrant quotation *in extenso*.

The policy of the Government of the United States in the present Nicaraguan disturbances is to take the necessary measures for an adequate legation guard at Managua, to keep open communications and to protect American life and property.

In discountenancing Zelaya, whose régime of barbarity and corruption was ended by the Nicaraguan nation after a bloody war, the Government of the United States opposed not only the individual but the system, and this Government could not countenance any movement to restore the same destructive régime. The Government of the United States will, therefore, discountenance any revival of Zelayism and will lend its strong moral support to the cause of legally constituted good government for the benefit of the people of Nicaragua, whom it has long sought to aid in their just aspiration toward peace and prosperity under constitutional and orderly government.

A group of some 125 American planters residing in one region in Nicaragua have applied for protection. Some two

dozen American firms doing business in that country have applied for protection. The American bankers who have made investments in relation to railroads and steamships in Nicaragua in connection with a plan for the relief of the financial distress of that country have applied for protection. The American citizens now in the service of the Government of Nicaragua and the Legation itself have been placed in actual jeopardy under fire.

Under the Washington Conventions the United States has a moral mandate to exert its influence for the preservation of the general peace of Central America, which is seriously menaced by the present rising, and to this end in the strict enforcement of the Washington Conventions and loyal support of their aims and purposes all the Central American republics will find means of valuable coöperation. These are among the important moral, political and material interests to be protected.

When the American Minister called upon the Government of Nicaragua to protect American life and property the Minister of Foreign Affairs replied that the Government troops must be used to put down the rebellion, adding: "In consequence my Government desires that the Government of the United States guarantee with its forces security for the property of American citizens in Nicaragua and that they extend this protection to all the inhabitants of the republic."

In this situation the policy of the Government of the United States will be to protect the life and property of its citizens in the manner indicated, and meanwhile to contribute its influence in all appropriate ways to the restoration of lawful and orderly government in order that Nicaragua may resume its programme of reforms unhampered by the vicious elements which would restore the methods of Zelaya.

The revolt of General Mena, in flagrant violation of his solemn promises to his own Government and to the American Minister, and of the Dawson agreement, by which he was solemnly bound, and his attempt to overturn the government of his country for purely selfish purposes and without even the pretense of contending for principle, make the political rebellion in origin the most inexcusable in the annals of Central America. The nature and methods of the political disturbances, indeed, place them in the category of anarchy rather than ordinary revolution. . . .

The Washington Conventions of 1907, to which this note refers as giving the United States a "moral mandate," were the result of a con-

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ference of the five republics of Central America held in Washington on the invitation of the American Government for the purpose of laying the solid foundations of peace between them. The particular section invoked by the United States to justify its action is Article II of the General Treaty of Peace and Amity, reading as follows:

Desiring to secure in the Republics of Central America the benefits which are derived from the maintenance of their institutions, and to contribute at the same time in strengthening their stability and the prestige with which they ought to be surrounded, it is declared that every disposition or measure which may tend to alter the constitutional organization in any of them is to be deemed a menace to the peace of said Republics.

The revolt of General Mena, ex-Minister of War, to whose election as President by the Nicaraguan Congress the American Government had protested in January as being distinctly unconstitutional, was considered by President Taft and the Department of State such a flagrant violation of Article II as to justify the United States in coming to the aid of the regular, established government of Nicaragua. Added to this motive was that indicated in the note of Sept. 18, namely, the necessity of affording proper protection to American and foreign interests.

The Dawson agreement, to which this note also refers, has not been made public, but it is understood to have adjusted the rival claims of the revolutionary leaders who came into power in 1909 with the moral support of the United States Government, and also to have pledged them to support loyally the political programme contained in that agreement.

Another important factor influenc-

ing the action of the United States in its intervention was the question of Nicaraguan finances. In pursuance of the provisions of the loan convention negotiated by the Department of State with Nicaragua in 1910 (AMERICAN YEAR BOOK, 1911, 65, 96-98), American officials had been designated to take charge of Nicaraguan customs, which, together with the national railroad, had been pledged as security for the loans advanced to Nicaragua by an American banking syndicate for the refunding of the national debt. The details of these financial transactions were not completely worked out until after the suppression of the Mena revolt in October. The convention in question, though not ratified by the United States Senate, has been in force in all its provisions precisely as if it had been so ratified. President Taft and Secretary Knox have considered this arrangement, together with the similar convention negotiated with Honduras, as of vital importance in the maintenance of peace and prosperity in those countries.

The energetic coöperation of the American marines enabled the Nicaraguan Government to crush the insurrection completely, and General Mena surrendered to Admiral Southerland at Granada on Sept. 26. He was taken to Panama, where he was detained under American surveillance in order to make certain that there would be no fresh attempts on the part of his adherents to foment trouble in Nicaragua.

The Presidential elections were held on Nov. 2 without disorder, and the provisional President Adolfo Diaz, the only candidate before the people, was elected to succeed himself. The American marines were withdrawn from Nicaragua shortly after the elections. (See also IV, *Nicaragua*.)

THE PANAMA CANAL

Great Britain and the Tolls Question.—The Act of Congress which passed Aug. 17, providing that American vessels engaged in coastwise trade should be exempted from all tolls in traversing the Panama Canal (see X, *The Panama Canal*), has

given rise to a controversy of considerable magnitude between England and the United States. Great Britain claims that this exemption constitutes a discrimination against British and other foreign vessels in contravention of Article III of the Hay-

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Panacefote Treaty of 1901. The clauses of this article treating of the matter of tolls read as follows:

The United States adopts as the basis of the neutralization of such ship canal the following Rules, substantially as embodied in the Convention of Constantinople, signed the 28th October, 1888, for the free navigation of the Suez Canal, that is to say:

1. The canal shall be free and open to the vessels of commerce and of war of all nations observing these Rules, on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens, or subjects, in respect of the conditions or charges of traffic or otherwise. Such conditions and charges of traffic shall be just and equitable.

While Congress was engaged in the discussion of the Act in question, Great Britain lodged an informal protest with the Department of State against the proposal to exempt American shipping from the payment of tolls, and requested that the bill should be held in abeyance in the Senate until the British Government might have time to file a formal and detailed statement of its views on the subject. Secretary Knox communicated the substance of this informal protest on July 12 to the chairman of the Committee on Inter-oceanic Canals. Mr. Knox stated:

The communication indicates it to be the opinion of His Britannic Majesty's Government that to exempt all American shipping from the payment of tolls would involve an infraction of the treaty, and indicates further the opinion that there would be no difference in principle between charging tolls only thereafter to refund them and remitting such tolls altogether. The opinion is expressed that the method of charging but refunding tolls, while perhaps complying with the letter of the treaty, would still contravene its spirit. The communication admits that there is nothing in the Hay-Panacefote treaty to prevent the United States from subsidizing its shipping, but claims that there is a great distinction between a general subsidy, either to shipping at large or to shipping engaged in any given trade, and a subsidy calculated particularly with reference to the amount of use of the canal by the subsidized lines or vessels. Such a subsidy, if granted, would not, in the opinion of His Britannic Majesty's Government,

be in accordance with the obligations of the treaty.

With respect to the proposal that exemption shall be given to vessels engaged in the coastwise trade, the communication states that it may be that no objection could be taken if the trade should be so regulated as to make it certain that only *bona fide* coastwise traffic, which is reserved for American vessels, would be benefited by this exemption; but that it appears to His Britannic Majesty's Government that it would be impossible to frame regulations which would prevent the exemption from resulting in a preference to American shipping, and consequently in an infraction of the treaty.

President Taft in signing the bill on Aug. 24 accompanied the Act with a memorandum setting forth his views as to the rights of the United States under the Hay-Panacefote treaty to deal with its shipping as it saw fit. The following passage from this memorandum summarizes the position of the United States:

In view of the fact that the Panama Canal is being constructed by the United States wholly at its own cost, upon territory ceded to it by the Republic of Panama for that purpose, and that, unless it has restricted itself, the United States enjoys absolute rights of ownership and control, including the right to allow its own commerce the use of the canal upon such terms as it sees fit, the sole question is, Has the United States, in the language quoted above from the Hay-Panacefote Treaty, deprived itself of the exercise of the right to pass its own commerce free or to remit tolls collected for the use of the canal?

It will be observed that the rules specified in Article III of the treaty were adopted by the United States for a specific purpose, namely, as the basis of the neutralization of the canal, and for no other purpose. The article is a declaration of policy by the United States that the canal shall be neutral; that the attitude of this Government towards the commerce of the world is that all nations be treated alike and no discrimination made by the United States against any one of them observing the rules adopted by the United States. The right to the use of the canal and to equality of treatment in the use depends upon the observance of the conditions of the use by the nations to whom we extended that privilege. The privileges of all nations to whom we extended the use upon the observance of these conditions were to

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be equal to those extended to any one of them which observed the conditions. In other words, it was a conditional favored-nation treatment, the measure of which, in the absence of express stipulation to that effect, is not what the country gives to its own nationals, but the treatment it extends to other nations.

Thus it is seen that the rules are but a basis of neutralization, intended to effect the neutrality which the United States was willing should be the character of the canal and not intended to limit or hamper the United States in the exercise of its sovereign power to deal with its own commerce, using its own canal in whatsoever manner it saw fit.

The British protest, therefore, is a proposal to read into the treaty a surrender by the United States of its right to regulate its own commerce in its own way and by its own methods—a right which neither Great Britain herself, nor any other nation that may use the canal, has surrendered or proposes to surrender. The surrender of this right is not claimed to be in terms. It is only to be inferred from the fact that the United States has conditionally granted to all the nations the use of the canal without discrimination by the United States between the grantees; but as the treaty leaves all nations desiring to use the canal with full right to deal with their own vessels as they see fit, the United States would only be discriminating against itself if it were to recognize the soundness of the British contention. (*Am. Journal of International Law*, Vol. VI, p. 976.)

Before signing the Panama Canal Act, President Taft recommended to Congress that an amendment be added to the bill stating that it was not intended to infringe any treaty rights, and also providing that "all persons, and especially all British subjects who felt aggrieved by the provisions of the bill on the ground that they are in violation of the Hay-Pauncefote treaty, might try that question out in the Supreme Court of the United States." Congress, however, did not see fit to accept this suggestion.

The British Government renewed its protest against the Act on Aug. 28, and announced on Sept. 2 that it would request an arbitration of the question at issue. During the debate on the bill in the Senate Senator Root, ex-Secretary of State, frankly admitted that the British contentions were based on sound grounds, and that the United States would in all probability lose if the question were ever submitted to arbitration. Senator Root considered the claim to exempt American vessels from tolls as "ridiculous," and stated that "the Hay-Pauncefote treaty is an executed contract; that England performed her part when she agreed to this treaty as a specific abrogation of the Clayton-Bulwer treaty which gave her much greater rights; and that the United States must now fulfil its part of the contract. The same attitude was taken by most of the leading newspapers.

In order to correct a misapprehension as to his attitude, President Taft declared, in a statement to the *London Times* on Oct. 4, that he had never in any of his utterances "wished to imply that he would refuse to countenance an appeal to The Hague." He had, however, expressed an earnest hope that "the question may be susceptible of diplomatic settlement, and is awaiting with great interest the detailed British argument against the law."

Great Britain's formal protest was presented on Dec. 9, when Ambassador Bryce read to Mr. Knox the contents of a dispatch from Sir Edward Grey setting forth the British position. The main argument of Sir Edward Grey is to the effect that while the Hay-Pauncefote treaty left the United States free to build and protect the canal, it expressly maintained the principle of Art. VIII of the Clayton-Bulwer treaty of 1850, guaranteeing to England the use of the canal on a complete equality with the United States.

SOUTH AMERICA

ECUADOR

The United States was compelled to dispatch the armored cruiser *Maryland* to protect American in-

terests at the port of Guayaquil during the revolutionary uprising in Ecuador in January (see IV, *Ecuador*). The Ecuadorian Government after the revolution was over agreed

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in July to compensate in part the American-owned railroad which had been commandeered by the Government for its own use, and to submit to arbitration the remainder of the claims presented on this account.

PERU

Putumayo Rubber Atrocities.—The civilized world has been shocked by authenticated reports of the perpetration of atrocious acts by officials of a British rubber company in the Putumayo district of Peru on the upper waters of the Amazon. The company in question was known as the Peruvian Amazon Co., and was organized in 1907 to take over the business of Julio C. Arana and Bros., all Peruvian subjects. It appears that this company has for years compelled the Indians of this district to gather the crude rubber for the company, and has caused them to be horribly scourged and even tortured to death at the hands of Barbado negroes imported for the purpose.

Sir Roger Casement, a special agent sent out by the British Government in 1911 to investigate conditions in the Putumayo district, fully confirmed these charges. He states in his report published in the special Blue Book, No. 6266, issued in July:

The Indians almost everywhere bore evidence of being flogged, in many cases of being brutally flogged, and the marks of the lash were not confined to men nor adults. Women, and even little children, were more than once found, their limbs scarred with weals left by the thong of twisted tapir-hide, which is the chief implement used for coercing and terrorizing the native population of the region traversed. The crimes charged against many men now in the employ of the Peruvian Amazon Company are of the most atrocious kind, including murder, violation, and constant flogging. The condition of things revealed is entirely disgraceful, and fully warrants the worst charges brought against the agents of the company and its methods of administration on the Putumayo.

As the direct result of this report, both the Peruvian and the American Governments appointed special agents to proceed to the Putumayo region to investigate independently conditions there. The Peruvian agent, Dr.

Romulo Paredes, fully confirmed in the main the truth of Sir Roger Casement's charges, though endeavoring to minimize the responsibility of the Peruvian Government. Dr. Paredes was in Washington in August, 1912, and gave much valuable information to the Department of State.

The Department of State appointed Stewart J. Fuller as special agent to proceed in July to the Putumayo district. His report confirming that of Sir Roger Casement has been submitted to Congress in response to its request of Aug. 8.

The House of Commons, upon the publication in July of the Blue Book on the subject of these barbarities, appointed a Select Committee to investigate further into the question with a view to determining the exact responsibility for the acts committed.

In spite of the evidence presented to the Peruvian Government by its own agent as well as by the agents of Great Britain and of the United States, it seemed disinclined to adopt the drastic measures necessary for the punishment of the offenders. On Dec. 17, however, the Peruvian judge investigating the atrocities ordered the arrest of Julio Arana. At least one other arrest has been made.

The National Congress of Peru adopted a vigorous protest against the action of the British and American governments as an insult to Peru and a menace of intervention. The other countries of South America seem to have regarded with keen misgivings the joint action of Great Britain and the United States in a district lying at the head waters of the Amazon, where the boundaries of Brazil, Peru, Ecuador and Colombia meet. They evidently fear the creation of spheres of influence and predominant interests of sinister import. At the same time, these four countries mentioned have seen fit to resurrect their respective claims to jurisdiction in the district in question, thus laying the foundations for future international complications and controversies.

Peru and Chile.—After an estrangement of over 30 years, resulting from the seizure by Chile of the rich nitrate provinces of Arica and Tacna in 1881, it was announced that Peru

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and Chile had resumed friendly relations once again in November, 1912.

The Canevaro Case.—A decision favorable to the contentions of the Government of Peru in the Canevaro case was announced on May 3 by the special arbitral tribunal which sat at The Hague from April 20 to May 12, 1912. The judges in the case were for Guido Fusinato representing the Government of Peru, and M. Louis Renault, umpire.

The facts in this case are as follows: The Government of Peru in 1885 delivered to the firm of José Canevaro & Sons, Italian in origin, though domiciled in Peru, *libramientos* (treasury warrants bearing interest) for the sum of £77,000 sterling, payable at different periods on account of claims recognized as valid by subsequent administrations. In 1885 Peru paid £35,000 sterling on account, leaving £43,140 still due the firm, which had been reorganized in 1885 upon the death of José Canevaro by his three sons, José Francisco, Cesar and Raphael Canevaro. The firm was dissolved in 1900 on the death of José Francisco. In 1889 the Government issued 1 per cent. bonds for the domestic debt. The question submitted to the tribunal was stated as follows:

Ought the Peruvian Government to pay in coin, or in accordance with the provisions of the Peruvian law on the domestic debt of June 12, 1889, the drafts (*lettres à ordre, cambials, libramientos*) now in the possession of the brothers Napoleon, Carlo, and Raphael Canevaro, and which were drawn by the Peruvian Government to the order of the firm of José Canevaro & Sons for the sum of £43,140 sterling, plus the legal interest on the said amount?

The tribunal found that the firm, after its reorganization in 1885, by reason of the domicile and nationality of its members, was Peruvian in nationality, and that therefore the debt was domestic in origin and hence to be settled in accordance with the laws of Peru. The tribunal therefore decided that the Canevaro heirs were entitled only to the bonds issued in 1889 to meet domestic debt, instead of the sum of £43,143 sterling as claimed. It is of interest to note

that this case was the tenth case to be decided by an arbitral tribunal since the establishment of The Hague Arbitration Tribunal in 1899. (*Am. Journal of International Law*, Vol. VI, p. 709.)

BRAZIL

Seizure of Coffee by the United States.—A controversy involving important questions of international law has arisen between Brazil and the United States owing to the action of the district attorney for the United States in the Southern District of New York, in requesting an injunction for "an immediate seizure of all coffee now in the possession of the warehouse belonging to the State of San Paulo, Brazil, so that the owner cannot sell it to anybody in this country at any price, cannot ship it abroad and sell it there, should a satisfactory price be obtainable, and cannot even return it to the place whence it came" (*Am. Journal of International Law*, Vol. VI, p. 702). The action was undertaken in a suit brought under the Sherman Act by the Department of Justice to check the American operations of the Brazilian "coffee-valorization" syndicate described in Department XIII, *Economic Conditions and the Conduct of Business*.

The injunction was denied on May 27, but as soon as it was known that this suit had been begun by the federal authorities, and before it was known that the court had denied the petition for a temporary impounding of the coffee in question, Señor da Gama, Ambassador from Brazil, lodged a vigorous protest with the Department of State, denying the right of the United States to interfere with property belonging to another nation. Señor da Gama took occasion to state the position of his government at a dinner of the Pan-American Society held in New York on May 27, in the following words, as reported in the press of the next day:

My hopes for a new era in our commercial relations received a heavy blow with the indorsement by your Government of the policy of paying for other people's merchandise not the price they ask for it, but the price that the

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United States, I mean the American merchants, want to pay for it.

It is a brand new doctrine, and the United States seemed disposed to enforce it, even to the sacrifice of long-standing international friendship.

In their eagerness to establish their right to meddle with the property of a foreign state, certain officials of this Government went so far as to proclaim before an American court of justice the forfeiture of the sovereignty of that state.

The claim thus made by Brazil that a nation engaged as a merchant in trade may plead immunity from suit as a sovereign right presents a novel and extraordinary question of international law. Until the court shall pronounce its final decision in the case, however, it is not properly one for diplomatic discussion, but the case holds possibilities of a tense situation.

EUROPE

ENGLAND AND GERMANY

Prior to the outbreak of the Balkan War, European diplomacy was principally concerned with the fear of war between England and Germany, and the necessity of new agreements and adjustments in anticipation of such an eventuality.

The strenuous efforts put forth by the Governments of Germany and Great Britain to come to a friendly understanding bore witness to the seriousness of the situation. Early in February Viscount Haldane, Secretary of War, and Admiral Beresford visited Berlin for the purpose of unofficial discussions with various members of the German Government.

While these informal and extra-official negotiations were in progress, Winston Churchill, First Lord of the Admiralty, in the course of a startlingly frank speech at Glasgow, stated that: "The British Navy is to us a necessity, and from some points of view, the German Navy is to them more in the nature of a luxury. Our naval power involves British existence; it is expansion to them." In a speech in the House of Commons on March 18, Mr. Churchill practically charged Germany with increasing its navy for the sole purpose of war with England, and stated that England would be compelled to increase its navy accordingly. Mr. Churchill again in the course of a debate in the House of Commons on July 22 emphasized the necessity imposed on England of keeping pace with German naval expansion. (See also IV, *Great Britain*; and XII, *The Navy*.)

The appointment in May of Baron Marschall von Bieberstein, Ambassador at Constantinople, and former

Minister for Foreign Affairs, to represent Germany at the Court of St. James was evidence of its desire to cultivate the most friendly relations with England. His exceptional skill as a diplomat was expected to be of powerful effect in smoothing over any difficulties between the two countries. His sudden death within a few months of his appointment was considered a great misfortune.

THE TRIPLE ENTENTE

The realization of the possibility of war compelled both England and Germany to seek to strengthen in every possible way their respective positions in Europe, the former through the Triple Entente, and the latter through the Triple Alliance. On the shiftings of these great forces to maintain the balance of power has the peace of Europe depended.

Perhaps the most important diplomatic event of 1912 in Europe was the transformation of the Triple Entente into a virtual alliance, an event already foreseen at the time of the *Panther* incident at Agadir in the summer of 1911 when it seemed likely that England in its support of France would be drawn into hostilities with Germany (see *AMERICAN YEAR BOOK*, 1911, p. 102).

In January a large delegation representing the House of Lords and the House of Commons paid a formal visit to Russia in return ostensibly for the visit of representatives of the Russian Duma to England in 1909. The occasion served to demonstrate the friendly relations between the two countries and emphasized the community of their interests as members of the Triple Entente.

On May 29 a momentous conference

was held at Malta by Mr. Asquith, Mr. Churchill and Lord Kitchener regarding England's naval and military position in the Mediterranean. It was then announced that England's naval base would be shifted from Malta to Gibraltar and that as a consequence British naval forces in the Mediterranean would be decreased. Sir Edward Grey stated in the House of Commons in July that England had no intention of maintaining in the Mediterranean a fleet equal to the combined fleets of other powers.

On Sept. 10 it was announced that France would concentrate its naval strength in the Mediterranean. This announcement, taken in connection with the purpose evinced by England to concentrate its naval strength in the neighborhood of the British Isles, was significant confirmation of the fact that France and England had entered into a definite alliance for the protection of their respective interests in the North Sea and the Mediterranean.

In the meantime France and Russia had been actively engaged in negotiations, first at Paris and later at St. Petersburg, having in view engagements similar to those entered into between England and France. It was disclosed not long after the visit of M. Poincaré, Prime Minister of France, to St. Petersburg in the month of August, that Russia and France had entered into a naval convention whereby they had agreed under certain contingencies to place their respective fleets at each other's disposal.

The cordial and complete understanding thus reached by the members of the Triple Entente was later confirmed and solidified by the series of conferences held by M. Sazonoff, Minister for Foreign Affairs of Russia, with the French and British Governments, on the occasion of his visit to France and England in September. While little has been officially given out as to the nature of the agreements entered into by the three nations, it is understood that they are most comprehensive and include questions concerning Persia and the Far East as well as Europe.

THE TRIPLE ALLIANCE

The negotiations of the members of the Triple Entente found their counterpart in the active and effective negotiations of the members of the Triple Alliance.

Franco-German relations had hardly been improved by the Moroccan agreement of November, 1911, which was accepted by France mainly as an expedient to avoid war, especially after the disclosures so offensive to French pride, resulting in the overthrow of the Caillaux ministry in January (see IV, *France*). Tension between the two countries remained the same, if not actually somewhat increased.

With France irreconciled on the one side, and Russia, on the other, committed to an active alliance with France and England, Germany felt compelled to make more solid the ties binding it to Austria-Hungary and Italy, whose interests likewise seemed identified with its own.

The meeting of the Kaiser with the Czar at Baltischport on July 4 was viewed with keen interest by all the powers, but it was apparently productive of nothing more than platonic professions of friendship.

The visit of Kaiser Wilhelm at Vienna on his way to Corfu in March was utilized to demonstrate the unity of interests between Germany and Austria-Hungary. Austria had already announced earlier in the year its intention to build immediately seven or eight battleships, thus enabling it to contribute more effectively to the protection of the interests of the Triple Alliance in the Mediterranean. The visit of the Kaiser to Venice after the visit in Vienna served also to demonstrate that Italy still remained true to the Triple Alliance and would in all probability consent to its renewal in 1913. These royal negotiations were followed by an interchange of visits between the statesmen of Germany, Austria and Italy, notably by that of Count Berchtold, Prime Minister of Austria, on the King of Italy at San Rossore on Oct. 20 after the outbreak of the Balkan War. It was officially announced at Vienna on Dec. 8 that the Triple Alliance had

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been renewed without change for a further term of 12 years after its expiry in 1914.

The end of 1912 thus found Germany, Austria and Italy solidly united for purposes of mutual defence as opposed to the union of England, France and Russia, and the first great test of these hostile groups was found in the diplomatic negotiations arising in connection with the war between Turkey and the Balkan Allies. (See *The Balkan War*, *infra*.)

RUSSIA

Treaty with the United States.—The action of the United States in notifying the Russian Government on Dec. 17, 1911 (see *AMERICAN YEAR BOOK*, 1911, pp. 67, 98), of its desire to terminate on Jan. 1, 1913, the treaty of 1832 between the two countries, owing to the refusal of Russia to admit American citizens of Jewish origin, was strongly resented by the Russian public.

On April 26 M. Sazonoff, the Minister for Foreign Affairs, expressed the friendly feeling of Russia for the United States and asserted that the abrogation of the treaty had been in an acceptable form. Referring to the possibility of negotiations for a new treaty, M. Sazonoff declared that Russia would not tolerate any proposition tending to the modification of the right of domestic legislation.

President Taft announced in a letter dated Nov. 29, replying to an enquiry of Simon Wolf, that the United States had no intention of establishing a *modus vivendi* of a compromise character with Russia pending the negotiation of a new treaty.

After Jan. 1, 1913, therefore, the treaty of commerce and navigation of 1832 remains entirely abrogated without any other agreement whatever to regulate the commercial intercourse of the two nations. Inasmuch as according to Russian law the highest tariff rates are to be applied to all importations from countries having no commercial treaties with Russia, and also that, according to the Payne-Aldrich tariff, rates shall be increased 25 per cent. on all articles imported from countries not granting the most-favored-nation

treatment to the United States in matters of tariff, there is every prospect of a tariff war between the two countries unless diplomacy is able to find a satisfactory way out of the difficulty.

THE BALKAN WAR

Alliance of the Balkan States.—The Congress of Berlin which attempted to alter the map of Europe after the Russian victory of 1878, in failing to recognize the just claims of the different nationalities in the Balkans, made itself responsible for more than 30 years of unrest, anarchy, and war in the Near East.

The struggle between Turkey and Italy over Tripoli, the revolt of the Albanians, the bitter factional differences of the Turks (see IV, *Turkey*) and the resulting weakness of the Government at Constantinople, all contributed to present a favorable opportunity for the Balkan States to move against Turkey in order to wipe out old scores and reconstruct along ethnic lines the map of Turkey in Europe. As early as February, 1912, the governments of Bulgaria, Servia, Montenegro, and Greece had come to a complete understanding and formed an offensive alliance for the purpose of securing the freedom of their compatriots and co-religionists from Turkish domination, and the aggrandizement of each State through the division of Turkey in Europe.

Massacres in Macedonia.—Early in August tremendous feeling was aroused in Bulgaria and the other Slavic States of the Balkans by the so-called massacres of Macedonians at Istib and Kotchana and other places. As a matter of fact these incidents were probably provoked deliberately by *agents provocateurs* of the Macedonian revolutionary committee. In the case of Kotchana, bombs were exploded in the crowded market place in order to arouse the fury of the Turkish authorities, who, in their efforts to find the perpetrators of the outrage undoubtedly killed some innocent persons as well as active sympathizers of the Macedonian committee. On Aug. 21 a great mass meeting, held at Philippopolis, in Bulgaria, to protest against these

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"massacres," demanded the immediate liberation of Macedonia.

At the same time as these occurrences, feeling between Montenegro and Turkey had been fanned to a white heat by boundary disputes, and actual fighting between troops of both countries stationed along the frontier. The Turkish Minister at Cetinje withdrew on this account, though ordered back subsequently by his government.

In the meantime, the Albanian revolt had succeeded in bringing about the overthrow of the Young Turk régime, the dissolution of Parliament, and the creation of a disordered state of affairs rendering the Government impotent for effective action either at home or abroad.

Count Berchtold's Proposals.—Count Berchtold, the Austrian Minister for Foreign Affairs, came forward at this juncture, Aug. 13, with a proposal to the powers to the effect that they should coöperate to restrain the Balkan States from upsetting the *status quo* in European Turkey, and to encourage the Porte in "a policy of moderate decentralization on ethnic lines." The purpose of Count Berchtold was doubtless to prevent war, but the effect of his proposition was to create general distrust and apprehension. A policy of decentralization along ethnic lines conveyed to the Turks the idea of European intervention in Turkish affairs for the ulterior purpose of the detachment of the Macedonian provinces from the direct control of the Sultan. To the Balkan allies this policy was interpreted as favorable on the whole to their pretensions.

Count Berchtold, after a mysterious conference with the Roumanian Government at Bucharest, announced on Aug. 31 that his idea of decentralization referred solely to suggested changes in the Turkish constitution. Count Berchtold and Herr Bethmann-Hollweg, the German Chancellor, met at Buchlau on Sept. 10 for a conference concerning the Balkans, and announced that they were in favor of a policy of "progressive decentralization" in European Turkey.

The Bulgarian Government on the same day appealed to the Powers for

the autonomy of Macedonia and accompanied its appeal with the threat of a resort to arms to accomplish this end in case the Powers failed to act. Turkey on the same day offered to give satisfaction to the claim of Bulgaria on account of the Bulgarian Macedonians killed during the "massacre" at Kotchana.

Army Mobilizations.—The Turkish Government announced at this time that army maneuvers would take place in the neighborhood of Adrianople. On Sept. 27, in reply to representations by the Ambassadors of the Triple Entente in Constantinople protesting against a measure of so threatening a character, the Porte replied that these maneuvers were an annual event and should not be considered as a menace to Bulgaria, with whom Turkey desired to maintain amicable relations. The detention at Uskub of large consignments of arms and ammunition ordered by Servia via Salonica, served to increase the tension between Turkey and the Allies. On Oct. 1, Bulgaria, Servia, Montenegro and Greece simultaneously announced a general mobilization of troops in the neighborhood of the Turkish frontier, in view of the mobilization of Turkish troops. Turkey immediately responded on Oct. 2 by ordering a general mobilization of all its land and naval forces.

Montenegro Declares War.—Relations between Montenegro and Turkey regarding the frontier incidents became so strained by Oct. 9 that the Chargé d'Affaires of Montenegro was instructed to break off diplomatic relations and make a formal declaration of war.

Efforts of the Powers to Prevent War.—The Powers in the meanwhile had been endeavoring to concert measures to prevent the outbreak of war. On Oct. 8 the representatives of Austria-Hungary and Russia at Sofia, Belgrade, Cettigne and Athens announced to the Balkan Allies the attitude of the Powers as follows:

The governments of Russia and Austria declare to the Balkan States:

First, that the Powers energetically approve any measure susceptible of causing a rupture of the peace.

Second, that, leaning on Article XXIII. of the Treaty of Berlin, they

will take in hand, in the interest of the Balkan peoples, the realization of reforms in the administration of European Turkey, it being understood that these reforms shall not affect the sovereignty of the Sultan or the territorial integrity of the Ottoman empire. The Powers reserve to themselves liberty of action for a collective ulterior study of these reforms.

Third, that if nevertheless war breaks out between the Balkan States and the Ottoman empire, they will permit at the end of the conflict no modification of the territorial *status quo* in European Turkey. The Powers will make collectively to the Sublime Porte representations similar to the above declaration.

The precipitate declaration of war by Montenegro early on Oct. 8, which was hastened by previous knowledge of the attitude of the Powers, enabled King Nicholas to avoid making reply to this note other than to state that the patience of Montenegro had become exhausted in its dealings with Turkey.

On Oct. 6 the Turkish Government, in an eleventh hour attempt to forestall intervention and prevent war, announced its intention to introduce in the European provinces the administrative reforms contemplated by the Treaty of Berlin and embodied in the law of 1880, which had been drafted with the coöperation of the Powers, but had never been put into force. The Powers addressed a note to the Porte on Oct. 10, taking official cognizance of the intention of the Turkish Government to introduce reforms which they stated would be discussed with the Porte, and again affirming that it was understood these reforms would not infringe the territorial sovereignty of Turkey. To this note the Porte immediately replied, reserving to itself liberty of action without the necessity of discussion of intervention by the Powers.

The Demands of the Allies.—On Oct. 13 the Governments of Bulgaria, Servia and Greece, acknowledging the note of the Powers of Oct. 8, stated their view that the time had come for definite and radical reforms in Turkey in Europe. They also addressed a note to Turkey on the same day demanding the execution within six months of definite reforms guaranteeing "the ethnic autonomy of the nationalities of the Empire

with all its consequences." They also demanded the immediate demobilization of the Turkish forces.

The Turkish Government, considering this demand as an offensive ultimatum, announced to the Powers on Oct. 16 that it had broken off diplomatic relations with Bulgaria, Servia and Greece, the latter having given added offence by its action of admitting the Cretan representatives into the Greek Parliament on Oct. 14.

Bulgaria, Servia, and Greece Declare War.—The Bulgarian, Servian and Greek Governments replied on Oct. 17 with a declaration of war, alleging that the conduct of Turkey left them no other alternative. In their proclamations appealing to their respective peoples for support, the Allies defined the war as a sacred one for the freedom of their Christian brothers from Moslem rule. Later on, when the fortunes of war had turned completely against the Turks, the Sheik-ul-Islam reciprocated with a proclamation of a "Jehad," namely, a holy war against Christians, but the Turkish Government, in response to protests of the Powers, endeavored to minimize the importance of this appeal to Moslem fanaticism.

Turkey's Counter Declaration.—Turkey replied on Oct. 17 with a counter declaration of war, alleging the following grounds:

The general mobilization and concentration of Bulgarian (*mutatis mutandis* in notes to Servia and Greece) troops on the Ottoman frontier, the daily attacks on the forts and outposts all along the frontier, the intervention in the internal affairs of Turkey and the demands no less inadmissible than inconceivable of the Bulgarian Government, have rendered impossible the maintenance of peace between Turkey and Bulgaria, a peace which the Imperial Government was always anxious to preserve.

M. Poincaré's Proposals.—The remarkable series of sweeping victories of the armies of the Allies within a very brief period of time (see IV, *Turkey*) completely upset all previous calculations and compelled the Powers to alter the intention announced in their notes to the Allies of Oct. 1, to prevent any change in the territorial status of Turkey.

Early in November, after the Turkish disasters of Lule Burgas and Tchorlu, M. Poincaré, the French Premier, came forward with a new formula pledging the Powers to a policy of "territorial disinterestedness." They were to agree to recognize the political and administrative changes in the territory occupied by the troops of the Allies, to secure the retention of the Sultan's sovereignty over Constantinople and environs, and the summoning of a European conference in which the Balkan States should participate.

The Attitude of Austria.—The French proposal met with the approval of the Governments of England and Russia, the other members of the Triple Entente, but was received evasively by Austria, Germany and Italy, members of the Triple Alliance. The policy of Austria from the beginning of the war was of the most disquieting character. Count Berchtold stated boldly on various occasions the intention of Austria to take all needful steps for the protection of vital interests which might be imperilled through the pretensions of the Balkan Allies. Austria was openly opposed to the advance of Serbia to the Adriatic, and the creation of a solid barrier of Slav States shutting off Austria from its road to Salonica, the goal of the policy of "*Drang nach Osten*."

With unpleasant memories of the Congress of Berlin before them, the Powers did not seem to welcome the proposal for a conference which might open up questions for general discussion, which they would prefer to settle in their own separate ways. Sir Edward Grey late in November proposed as a compromise that the representatives of the Powers residing at one of the European capitals should be empowered to exchange views regarding the Balkan situation. This idea met with general approval and it was suggested that London would be the most fitting place for this "diplomatic clearing house."

The Suspension of Hostilities.—On Nov. 4, when the Bulgarian army was already at Tchataldja, in front of the outer defences of Constantinople, the Turkish Government felt driven to appeal to the Powers for

their mediation in favor of peace, but was informed that there could be no mediation which was not welcomed by all the belligerents. On Nov. 14 it was announced that Turkey had appealed direct to the Allies for a cessation of hostilities. On Nov. 19, after an exchange of views between the Allies, Bulgaria made known to the Turkish Government the conditions under which they would agree to an armistice. These conditions, which include the surrender of Adrianople, the withdrawal of the Turkish troops from the lines of Tchataldja and other exacting demands, were considered entirely unacceptable by the Porte and hostilities were accordingly renewed with increased vigor on Nov. 21.

The renewal of hostilities, however, did not prevent the continuation of peace negotiations, and after a series of conferences covering several days, during which time fighting was suspended at Tchataldja, a definite armistice was concluded on Dec. 3, providing for the complete suspension of hostilities pending negotiations for peace which were announced to open at London on Dec. 13. Serbia and Montenegro were also parties to the agreement, but Greece declined to join, preferring to continue single handed its military operations by land and sea.

Negotiations for Peace.—The first meeting of the peace conference was held in St. James' Palace, London, on Dec. 16, when it was found that the Turkish representatives were not empowered to treat with the Greek delegates so long as Greece was not a party to the armistice. Turkey, however, agreed to withdraw its objections in this respect on condition that the Allies should consent to the revictualing of the fortress of Adrianople during the continuance of the armistice. As this was deemed by the Allies a matter entirely without the scope of the peace negotiations, it was agreed to leave the question to be decided by Turkey and Bulgaria, the two parties directly concerned. The formal discussion of the terms of peace began on Dec. 23 with the presentation of the demands of the Allies. These demands included the cession of the whole of

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Turkey in Europe with the exception of a small strip of territory in the neighborhood of Constantinople and the Dardanelles.

While these negotiations were in progress the diplomatic representatives of the Powers in London were engaged in "informal conversations" of considerable importance. As the result of these "conversations" it was officially announced on Dec. 20 that:

The ambassadors have recommended to their Governments and the latter have accepted in principle Albanian autonomy, together with a provision guaranteeing to Servia commercial access to the Adriatic. All the six governments have agreed in principle on these two points.

This announcement, which was followed by semi-official statements indicating the willingness of Servia to defer to the wishes of the Powers, was interpreted as meaning that the substantial accord of the Powers on the two most important questions

arising from the Balkan War had rendered a general war impossible, and that there should be no insuperable difficulties in the way of peace, once the Allies and Turkey should have come to an agreement.

On Dec. 28 Turkey replied with counter proposals which were immediately rejected by the Allies. Turkey proposed to retain the province of Adrianople and the Aegean islands, suzerainty over Macedonia, and sovereignty over Albania, which should be autonomous under the government of a Prince of the Imperial Ottoman house; the Cretan question, moreover, was to be withdrawn from consideration, as concerning only Turkey and the Great Powers. It was not until Jan. 1, 1913, that a basis of discussion was reached, when Turkey, in modified proposals, offered to cede to the Allies the Turkish provinces west of the Vilayet of Adrianople, and to recognize the autonomy of Albania, still refusing, however, to surrender the Aegean islands.

ASIA

CHINA

The New Republic.—The disintegration of the Manchu Dynasty and the establishment in its place of a republican form of government as the result of the revolution begun late in 1911 (see IV, *China*; and *AMERICAN YEAR BOOK*, 1911, p. 105, 145-147) led to a series of readjustments in the separate and collective relations of the Great Powers with China.

On Jan. 2, Sun Yat-sen was inaugurated as provisional President at Nanking. One of his first acts was the issuance of a proclamation on Jan. 5, announcing the establishment of the Republic, and requesting its recognition by other nations. The new government promised faithfully to respect all treaties and concessions affecting the rights of foreigners.

In view of the threatening attitude of the troops in Peking, it was deemed necessary to send extra guards for the Legations and to land foreign troops for the purpose of occupying the railroad connecting Peking with Tientsin. Most of these

troops were landed on Jan. 6, the United States, however, not sending its contingent until Jan. 19.

On Feb. 12 occurred the formal abdication of the Manchu dynasty. Yuan Shi-kai assumed charge of the government on the following day.

Although the nations represented at Peking have continued to carry on unrestricted diplomatic relations with the government of Yuan Shi-kai, they have refrained from a formal recognition of the republic during the period of its probation. Such recognition depends on the acceptance of the republican régime by a general election throughout the country, and on the ability of the new government to afford adequate guarantees for the safeguarding of the rights of foreigners.

The first nation to take official notice of the establishment of the republic was the United States. A concurrent resolution was introduced in Congress on Feb. 27 and adopted April 17, extending the congratulations of the United States to the people of China. Though this resolution did not constitute a recogni-

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tion of the republic, inasmuch as the power to extend recognition rests with the President, it was meant as the basis for subsequent recognition.

In the early days of the revolution before the downfall of the Manchu dynasty, there was reason to fear that individual nations might take advantage of China's internal dissensions in order to forward selfish ends. Russia had already begun to move in Mongolia. Japan was suspected of seeking valuable commercial concessions. England and Japan together were apparently working in favor of a constitutional monarchy in China in preference to a republic. At such a time of uncertainty regarding the attitude of the other great powers, the United States made clear its own attitude in China, and facilitated thereby a better understanding of all the Powers. Mr. Knox, Secretary of State, in a message dated Feb. 3, replying to an enquiry from Count Bernstorff, the German Ambassador at Washington, concerning the attitude of the United States toward the changed situation in China, stated:

There happily has thus far been no reason for interference on the part of foreign powers, inasmuch as both Imperialists and Republicans have guaranteed the lives and property of the foreign population, and the latest reports tend to strengthen the belief that it is improbable that future developments will necessitate such interference. If, however, contrary to all expectations, any further steps should prove necessary, this Government is firm in the conviction that the policy of concerted action after full consultation by the powers should and would be maintained in order to exclude from the beginning all possible misunderstandings.

Moreover, this Government has felt it to be a corollary of the policy of strict neutrality hitherto pursued by common accord with respect to loans to China, to look with disfavor on loans by its nationals unless assured that such loans would be of neutral effect as between the contending factions, as it has also felt that the present was an occasion when there might be invoked with peculiar appropriateness the principle of the lending Government's deterring their nationals from making loans not approved as to their broad policy by their own Governments, in consultation with the other interested powers.

The principle enunciated by Mr. Knox, of concerted action by the powers in order to prevent independent action by any of them detrimental to the interests of the others and to China, has served apparently as the *point de depart* in the diplomatic relations of China with all the other nations, with the possible exception of Russia.

Loan Negotiations.—There has been substantial accord between the great Powers regarding the most important international question that has arisen since the establishment of the republic, namely, that of the granting of loans to China for the purpose of strengthening the new Government and enabling it to carry out needed reforms. Bearing in mind the experience of other countries, such as Persia, it was felt by the Powers that it would be productive of mischievous results if any single group of financial interests should be allowed to get a privileged position in China through the placing of loans, which might at the same time imperil China's financial and even its internal independence, because of the conditions of such loans. The Powers have believed that it would be preferable from their own point of view, as well as from that of China, that no revenues should be mortgaged for the purpose of any separate loan made by one national group of financiers, and that there should be adequate assurances that foreign loans would not be unwisely squandered, for ends not really in the interest of China.

The principal incidents in the history of the loan negotiations are as follows. A group of American capitalists in 1908 undertook a loan of \$20,000,000 for the establishment of a bank to serve as financial agent for the Chinese Government in Manchurian development enterprises. This led to further financial negotiations with the Government at Peking, including the Chinchou-Aigun Railway loan agreement, and the loan for the reform of the currency. To this American group of capitalists were added other groups representing England, Germany and France, making up a combination which was known during the later negotiations

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as the Four Groups. (See AMERICAN YEAR BOOK, 1911, p. 145.)

Immediately after the establishment of the republic in February, the Chinese Government requested the Four Groups for a loan of about \$8,500,000 a month for six months, to enable the Government to meet the ordinary expenses of administration and facilitate the disbandment of the troops, during a period when it would be difficult to gather in taxes owing to the unsettled state of affairs throughout the country. The total amount needed by the government was estimated to be about \$50,000,000. The Four Groups were asked also to place a loan of \$300,000,000, to be issued over a period of five years, the proceeds of which were to be employed, first, to repay advances already made; second, to liquidate outstanding indebtedness for the indemnity due on account of the Boxer uprising, and other arrears; and third, to provide funds for administrative reforms and industrial development. While these negotiations were in progress, the Four Groups advanced about \$850,000 to the Government on March 9 to enable it to meet its immediate needs, and sums amounting in all to about \$9,000,000 were later advanced by the same groups.

At the same time that the Government was negotiating with the Four Groups, it entered into an agreement with a Belgian group of financiers for a loan of \$50,000,000, and received a small advance. Upon the vigorous protest of the Four Groups, with the support of their respective governments, against the signing of an independent loan, and the giving as security of taxes already pledged for the Boxer indemnity and other purposes, the Belgian loan was definitely canceled on April 27, and negotiations resumed with the original Four Groups.

The importance of these loan negotiations led to the participation of financiers representing the governments of Russia and Japan in the new Six-Power Group, which, after extended conferences held in London and Paris, formulated the definite conditions under which China would be able to obtain the loan of \$300,-

000,000. These conditions, as later set forth in a statement issued by representatives of the American financiers concerned, were as follows:

First: That the purposes for which the funds were required should be stated by the Chinese and approved by the groups.

Second: That China should adopt a system of audit which would insure the effective expenditures of loan funds for the purposes specified.

Third: That the salt taxes, to be hypothecated for the service of this loan, should be administered, either by the existing Maritime Customs organization or by a separate service like the customs under foreign direction, thus safeguarding the proper administration of the security despite the possible continuation of recurrence of unsettled conditions in China.

The financial needs of China were so pressing as to induce the Chinese Government to give a tentative approval to the placing of a loan under these conditions, but on June 25 it was announced at Peking that the Government had rejected definitely the proposed agreement, on the ground that the conditions imposed by the Six-Power Group would infringe the sovereign rights of China. It was generally understood at the time that Russia had intimated that it would not consent to the expenditure of any considerable part of the proposed loan on military equipment. Likewise, Japan was credited with having expressed an intention to veto the expenditure of any large amounts on railroad construction in Manchuria.

Whether or no the Chinese Government was justified in its apprehensions, it could not be criticised for seeking elsewhere the most advantageous terms attainable. Through the intermediary of A. Wendell Jackson, an American engineer, the government at Peking was able to induce the banking firm of Charles Birch Crisp & Co., of London, to undertake the floating of a loan of \$50,000,000, under conditions entirely satisfactory to China. This loan was opened to the public on Sept. 24, and in spite of the open disapproval of the British Government was subscribed to immediately to the extent of about one-half the total amount, the un-

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derwriters being responsible for the remainder.

While the British Government had no power to prevent the floating of this loan, it could not but look with disfavor on the operation, in view of its having pledged itself to the principle enunciated by Mr. Knox, to the effect that there should be concerted action by all the Powers in order that none should obtain special and exclusive privileges. The Government therefore endeavored to discourage the Crisp loan, and through the British Minister in Peking, joined with the other Powers in protesting against the pledging of any revenue for this loan, already pledged for the Boxer indemnity and other foreign obligations.

On Sept. 27, Yuan Shi-kai replied to Minister Jordan that other revenues would be found to guarantee the Crisp loan, and also that the Government had no further desire to borrow from the Six-Power Group.

It was subsequently intimated that the Chinese Government was prepared to reopen negotiations, but in the meantime the American group of financiers, including J. P. Morgan & Co., Kuhn, Loeb & Co., the First National Bank and the National City Bank of New York, as announced in a formal statement to the press, dated Sept. 25, have withdrawn from the Six-power Group. It is not understood, however, that this has in any way altered the policy of the United States Government as enunciated in Mr. Knox's note of Feb. 3. On Dec. 12 it was announced that the Six-Power Group was prepared to issue a loan to China on extremely favorable terms, and that the firm of Crisp & Co., as well as other British banking firms, would be allowed to participate.

Russia and Mongolia.—The contiguity of Mongolia to Siberia, and of Chinese Turkestan to Russian Turkestan has long marked those provinces as spheres of Russian interest and hence exposed to commercial and political encroachments. Russia has long claimed, under its treaty of 1881 with China, especial privileges in these provinces. Before the outbreak of the revolution in 1911, the Czar's Government was in-

creasing its diplomatic pressure on the government at Peking in order to secure recognition of what Russia considered to be its predominant interests in that region.

On Dec. 29, 1911, when it was evident that the Manchu dynasty was tottering to a fall, and the dismemberment of the Empire seemed likely, Chaptsum, Dampa Kutuchtu, the highest dignitary of the Lamaite Church in Mongolia, was proclaimed autocratic monarch of Outer Mongolia. On Jan. 8, Russia, manifesting the special interest it felt in Mongolia, notified the Chinese Government that the internal independence of Mongolia must be recognized, and that all Chinese troops and officials should be withdrawn. In making these representations Russia denied any intention of establishing a protectorate over Mongolia. Russia also took occasion in July, in connection with the alleged slaughtering of 100 Russian Mahometan subjects in Chinese Turkestan, to couple its demand for indemnity with a threat to the effect that if China could not protect Russians in Turkestan, Russia would.

In September, the Government at Peking addressed a note to the Powers in which it maintained, first, that Mongolia, Tibet, and Manchuria were integral, dependent parts of China; second, that these provinces might not enter into any engagements with other nations; third, that no nation should interfere with Chinese sovereignty in these provinces; fourth, that the Government of the Republic was responsible for the safeguarding of the rights of foreigners in said districts; and fifth, that the disturbances in Mongolia, Tibet and Manchuria were of the nature of brigandage and had no political significance. This note was evoked not only by Russia's action in Mongolia, but by England's action in Tibet (see *infra*).

On Oct. 22 it was announced that M. Korostovetz, former minister plenipotentiary for Russia at Peking, had been received in solemn audience by the Khan of Mongolia at Urga, its capital, and that Russia had formally recognized the independence of Mongolia. A treaty between Russia and the new state of Mongolia

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was signed on Nov. 3 and according to unofficial notices was understood to contain the following provisions:

1. Russia undertakes to maintain the independence of Mongolia, to support its right to have a national army, and to forbid the entry of Chinese troops or Chinese colonists on the soil of Mongolia.

2. Mongolia grants to Russian subjects and commerce special rights and privileges, and agrees to grant to no other nation any greater rights and privileges.

3. No treaty made by Mongolia with China or any other nation shall infringe in any way the provisions of the present treaty, without the consent of the Russian Government.

4. The treaty comes into force from the day of signature.

A curious feature of this treaty is its failure to define the limits of Mongolia, whether it refers to Outer Mongolia alone or to the entire province, which as a matter of fact would mean a total area of over a million square miles.

Following the signature of this treaty, Russia began to send troops into Mongolia, to Kobdo and other places, for the purpose of driving out Chinese colonists and aiding the Government to resist any attempt of China to recover the province. It was reported that Chinese troops were being despatched late in November from Kucheng toward Kobdo.

A mass meeting of 110 Mongol princes and chieftains was held in Peking, on Nov. 17, for the purpose of protesting against the action of Russia. The treaty signed at Urga, on Nov. 3, was repudiated by them, and the Chinese Government was appealed to for military protection for those Mongolians who might pledge allegiance to the Republic. It was announced that the Government in response to this request had decided on Nov. 18 to send 45,000 troops of the northern army into Mongolia.

Such a move on China's part would mean war with Russia unless the matter were susceptible of diplomatic arrangement. The latter course would seem to be the one preferred by China, inasmuch as the Government of Yuan Shi-kai, while acceding to the request of the Mongolian princes, at the same time entered into nego-

tiations with Russia. The Chinese Government is understood to have proposed that it should retain control over the foreign relations of Mongolia, that no other foreign power should send troops into that province, and that China should be allowed to maintain a guard at Urga as in the case of Tibet.

England and Tibet.—It has long been evident that Great Britain has directed its policy toward the creation of buffer states between India and the Russian possessions in Asia, and that British interests would best be served by the maintenance of Tibet as an autonomous state under Chinese suzerainty. The treaty signed at Lhasa in 1904, by Colonel Younghusband, in behalf of England, provided that Tibet should not cede any territory nor grant any concessions, nor pledge its revenues to any other power without the consent of Great Britain. The Anglo-Chinese agreement of 1906 recognized Chinese suzerainty over Tibet. The Anglo-Russian treaty of 1907 recognized "the fact that Great Britain, by reason of her geographical position, has a special interest in the maintenance of the *status quo* in the external relations of Tibet."

The Chinese garrison at Lhasa killed several thousand Tibetans with machine guns during an uprising in April, 1912, and was compelled later to withdraw. The Dalai Lama, who had been residing under British protection in Darjeeling since his expulsion by the Chinese, thereupon returned to Lhasa to resume his political and spiritual leadership.

England opposed the sending of Chinese troops to restore Chinese authority at Lhasa. Sir John Jordan, the British Minister at Peking, was instructed late in July to urge the Chinese Government to recognize the autonomy of Tibet, to withdraw the troops already despatched, and to send only a diplomatic agent accompanied by a bodyguard to reside at Lhasa as the representative of China in matters relating to the foreign affairs of Tibet. The Chinese Government was informed that on its acceptance of these propositions would depend the recognition by Great Britain of the Republic of China.

Foreign Advisors.—The new Republic Government at Pekin has demonstrated good judgment in its choice of foreign advisors in the various branches of the government. In addition to the foreign officials employed in the Customs Service and the army, China has secured during the year 1912 the services of the following persons: Dr. George E. Morrison, correspondent for the *London Times* in Pekin for fifteen years, was chosen to be the political advisor of the Republic. Sir Francis Taylor Piggott, chief justice of the supreme court at Hong Kong since 1905, was appointed legal advisor to the government at Pekin. Dr. W. Roest, of Batavia, Java, was asked to assist the Chinese Government in the reform of the currency on a gold basis.

JAPAN AND RUSSIA

An event of great international importance in 1912 was the evident understanding reached between Russia and Japan as to their respective interests in China and the Far East, as the result of the special visit of Prince Katsura, ex-Prime Minister of Japan, to St. Petersburg in July. This visit was abruptly terminated on the death of the Mikado on July 31, but it seems certain that Prince Katsura had succeeded in establishing a substantial accord between the two governments on all vital interests at issue. This agreement is understood to have been supplementary to the understanding reached on July 4, 1910.

Among the minor questions adjusted by Prince Katsura was that of the claim of Russia to a maritime jurisdiction of 12 miles from the coast in the Sea of Okhotsk, where the Japanese had long enjoyed valuable fishing privileges. This question became so acute that Japan dispatched three warships early in May to the water mentioned, and asked that the matter be referred to The Hague Tribunal. It would appear to have been settled by diplomatic negotiation, instead, Japan having admitted Russia's claim in return for the recognition by Russia of the claims of Japan in Manchuria.

PERSIA

Departure of the American Financiers.—In spite of the official assurances given by Russia and England, the process termed by W. Morgan Shuster as "the strangulation of Persia" proceeded without apparent abatement in 1912 (see also IV, *Persia*; and *AMERICAN YEAR BOOK*, 1911, pp. 104, 148). Mr. Shuster, having been compelled to resign on the demand of Russia, turned over the office of treasurer-general of Persia to his assistant, F. E. Cairns, on Jan. 7, and left Teheran on Jan. 11. M. Monard, a Belgian in the employ of the Persian Government, was named by the cabinet as provisional treasurer-general. Mr. Cairns and the other American assistants of Mr. Shuster declined at first to recognize M. Monard's authority and were threatened with imprisonment by the Persian cabinet. They thereupon cabled an appeal to the United States Government to assist them in the maintenance of their rights under their contracts.

On Feb. 5 the Persian authorities agreed to pay the three principal assistants of Mr. Shuster their salaries for three years and traveling expenses to the United States. The other assistants were allowed 18 months' salary and traveling expenses. Their departure marked the end of the project begun by Mr. Shuster for Persia's regeneration.

Russian Aggressions.—Early in January Russia moved large bodies of troops into Persia, occupying practically the entire province of Azerbaijan, and the northeastern portion of the province of Khorasan, in which is located the holy city of Meshed. M. Sazonoff, the Russian Minister for Foreign Affairs, thus defined the policy of Russia to a correspondent of the *New York Times*, on Jan. 2:

After the Russian punitive expeditions have restored peace in the rebellious towns, and when the Persian Government is strong enough to maintain peace, the Russian military detachments will be withdrawn at the expiration of a certain time. Russia has no designs against the independence of Persia.

British-Russian Loan.—On Feb. 19 Russia and England in a joint note

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to the Persian Government offered to provide a loan of \$1,000,000 on the following terms:

1. Persia should conform to the principles of the Anglo-Russian agreement of 1907, which in defining spheres of influence had practically determined the ultimate partition of Persia.

2. The Persian Government should dismiss the irregular troops which formed the backbone of the army, and should reorganize the army on a basis to be agreed upon with England and Russia.

3. An amnesty should be granted to the ex-Shah and his followers.

These terms were finally assented to by Persia on April 11. Persia agreed to pay the ex-Shah a pension of \$62,500, and on March 2 he left the country under Russian protection.

The Trans-Persian Railway.—It was announced on June 5 that England had signed a tripartite agreement with Russia and Persia regarding the construction of a Trans-Persian railroad reaching to the frontier of Baluchistan and India. This announcement created considerable opposition in England, on the ground that England's interests in India

would be menaced by the approach of a railroad from Russia.

Sir Edward Grey, replying to an interpellation on the subject in the House of Commons, on July 10, stated that England had not definitely consented to the construction of the railroad, but that the agreement provided merely for a preliminary survey and study of a "Société d'Etudes." Sir Edward also asserted that the Anglo-Russian agreement of 1907 served to tie Russia's hands and prevent the absorption of Persia. Following lengthy conferences at Balmoral Castle between King George, Sir Edward Grey and M. Sazonoff on the occasion of the latter's visit to England in September, an official statement was issued explaining the attitude of Russia and England toward Persia:

No new political agreement affecting Persia has been discussed. Neither power has any intention or desire to partition Persia. In order to expedite the withdrawal of foreign troops from Persia both powers are carefully considering how they could best assist in strengthening the Persian Government for the purpose of enabling it to re-establish order and secure the safety of the trade routes.

AFRICA

MOROCCO

Establishment of a French Protectorate.—The exchange of the ratifications by Germany and France at Berlin, on March 12, 1912, of the treaty agreed upon in November, 1911, regarding their respective rights in Morocco, left France free to carry to a successful conclusion its policy of the "Tunisianization" of Morocco.

On March 30 Sultan Mulai Hafid signed a treaty with France recognizing definitely the establishment of a French protectorate along practically the same lines as in Tunis. This arrangement leaves the foreign affairs of Morocco entirely in the hands of the French resident commissioner-general at Fez, and the representation of Moroccan interests abroad in the hands of French diplomatic and consular officials. It gives France unrestricted rights to intervene in the internal affairs of the

country for the maintenance of order, guarantees to foreigners, etc. General Lyautey was appointed, April 28, first Resident-General. French troops were engaged throughout the year in suppressing serious uprisings of native tribes. The Sultan, Mulai Hafid, abdicated on Aug. 12 in favor of his brother, Mulai Yusef.

Adjustment of Spanish Claims.—The disappearance of Morocco as an independent nation, and its absorption by France were acquiesced in by all of the Powers without question, with the exception of Spain, whose special claims in Morocco were not susceptible of easy diplomatic adjustment. After prolonged negotiations, which at moments seemed to threaten a diplomatic rupture between France and Spain, it was announced on Oct. 26, 1912, that the two countries had come to a complete agreement on all questions in dispute. This agreement included the

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recognition of the rights of Spain over a large extent of territory on the Mediterranean, and a small extent of territory in the neighborhood of the port of Ifni on the Atlantic facing the Spanish islands of the Canaries. It also provided for the establishment of an international administration of the town and port of Tangiers.

TRIPOLI

Treaty of Peace.—The war begun by Italy against Turkey, on Sept. 29, 1911, for the purpose of acquiring the province of Tripoli (see also IV, *Turkey*; and *AMERICAN YEAR BOOK*, 1911, pp. 103, 143), the object of Italian ambitions for many years, was brought to a successful conclusion on Oct. 15 by the signature of a protocol by representatives of the two nations at Ouchy, Switzerland, after weeks of informal negotiation. The signature of the definitive treaty of peace took place three days later at Berlin. These negotiations were hastened considerably by the outbreak of the war between the Balkan Allies and Turkey, which forced the latter to accept the best terms it could obtain from Italy.

The principal provisions of this treaty were, first, the recognition by Turkey of the autonomy of Tripoli; second, the withdrawal of Turkish troops; third, the recognition of the spiritual authority of the Sultan over the Mohammedans of Tripoli; fourth, the appointment by the Sultan of a representative to reside in Tripoli for the protection of Ottoman interests; fifth, the withdrawal of Italian forces from those islands of the *Ægean* occupied during the year, said withdrawal being conditional on the fulfillment by Turkey of certain requirements; sixth, the assumption by Italy of the portion of the Ottoman public debt represented by the assigned revenues of Tripoli; seventh, the assent of Italy to the raising of the *ad valorem* customs dues of Turkey from 11 per cent. to 15 per cent., and to other changes desired by Turkey in connection with the suppression of privileges enjoyed by Italy in common with other nations under the Capitulations. The contents of other secret articles of the same

treaty were not disclosed, though there was reason to suspect that they had relation to the war between Turkey and the Balkan States.

International Incidents of Turco-Italian War.—Diplomatic relations between France and Italy became seriously strained by the action of the latter in seizing two French vessels, the *Carthage* and the *Manouba*, the former on Jan. 17, on the charge of transporting two aeroplanes from Marseilles to Tunis for the use of the Turks in Tripoli, and the latter on Jan. 19, on the charge of having 29 Turkish officers on board, proceeding to Tripoli *via* Tunis.

The French Government demanded the immediate release of both vessels, which had been taken by the Italians to the port of Cagliari in Sardinia. The French Government claimed that the two aeroplanes were for exhibition purposes in Tunis, and that the Turkish subjects on the *Manouba* were enrolled members of the Turkish Red Crescent Society, corresponding to the Red Cross Society. The *Carthage* was released on Jan. 20, after assurances had been given that the aeroplanes would not be placed at the service either of the Turks or the Italians.

The Italian Government on Jan. 22 offered to submit the case of the *Manouba* to The Hague for arbitration. On Jan. 23 the French Government threatened to withdraw its ambassador from Rome if the Turks seized on the *Manouba* were not released immediately. Italy consented on Jan. 27 to hand over the 29 Ottoman prisoners to the French Consul at Cagliari to be sent to Marseilles, where it should be left to a French commission whether or not they should be allowed to proceed to Tunis. It was afterwards decided that they were *bona-fide* members of the Turkish Red Crescent Society, and were permitted to continue their voyage.

Closing of Dardanelles.—The bombardment of the forts at the entrance of the Dardanelles by Italian war-ships, on April 18, led to a serious international situation owing to the enforced closing of the straits by the Turkish Government as a measure of protection. Navigation was entirely suspended and many foreign mer-

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chant ships were detained at great loss until May 1, when Turkey decided to reopen the straits upon the urgent representations of certain of the Powers immediately affected. (See also IV, *Turkey*.)

INTERNATIONAL NOTES

Germany and the United States.—The visit of a German fleet to the United States in January, 1912, to return the visit of the American fleet of the previous year, was made the occasion for official courtesies and manifestations of the cordial relations between the two countries.

Great Britain and United States.—The United States Senate ratified on March 7 the arbitration treaty with Great Britain, though insisting on important amendments leaving to the Senate the right to review the findings of an international commission of inquiry appointed to consider any controversy between the two countries. The retention of the provision for an interval of time for deliberation and discussion before either nation might resort to war renders the treaty of considerable value in spite of the amendments. An agreement was entered into by England and the United States on April 27, providing for the arbitration of 202 claims of Americans, and 92 British claims of a private pecuniary character. A time limit of four months was allowed for the presentation of other claims of a like nature.

Crete.—On March 12 the Cretans abolished the executive form of government instituted by the Powers, and adopted a Constitutional Assembly of 45 members having full powers. Deputies were sent to the Greek Parliament at Athens, but were not allowed to take their seats until Oct. 14 in order that war with Turkey might not be precipitated before Greece was properly prepared.

Turkey and United States.—The merchant vessel *Texas*, flying the American flag and having a considerable number of passengers aboard, was sunk either by a cannon shot fired from a fort or by the explosion of a mine, while entering the harbor of Smyrna on April 30, at a time when an attack by the Italian fleet was expected. Few of the passengers were saved and the incident

became the subject of a protest of the United States Government which ordered a full inquiry with the intention of fixing the exact responsibility of the Turkish authorities.

France and United States.—The visit to the United States of a delegation of distinguished Frenchmen, including M. Hanotaux, an ex-Prime Minister, in May, 1912, for the purpose of presenting a bust of Champlain, by Rodin, which was placed on the monument commemorating his exploits on Lake Champlain, was the occasion for marked demonstrations of cordiality between the two nations. The arbitration treaty with France was ratified by the Senate, March 7 (see "*Great Britain*," *supra*).

Russia and Turkey.—The special arbitral tribunal convened at The Hague to consider the claim of Russia against Turkey for the payment of interest on the delayed payments of the indemnity imposed by the war of 1878 gave its decision on Nov. 11, 1912, to the effect that Turkey was under no obligation to pay the interest demanded, inasmuch as the tribunal was of the opinion that, in diplomatic correspondence with the Porte, Russia had expressly relinquished its rights.

Liberia.—Through the friendly mediation of the United States Government, an agreement was signed in London, in March, 1912, whereby the finances of the Republic of Liberia, which had become badly demoralized, were to be rehabilitated by American, German, French and British bankers, who undertook to float a loan of \$1,000,000. Under this arrangement the customs receipts of Liberia were pledged as security for the loan, and placed under the supervision of a receiver-general designated by President Taft. It was announced on Nov. 16 that Read Paige Clark of New Hampshire had been appointed to this post and that he would be assisted by three receivers named by Germany, France and Great Britain.

INTERNATIONAL CONGRESSES AND EXPOSITIONS

The following is a substantially complete list of the international congresses, conferences, and expositions of 1912. Many of the congresses are given extended notice in other departments of the YEAR BOOK, complete references to which will be found in the Index. The results of a few important conferences not covered elsewhere, mainly of a diplomatic character, are summarized below.

Accident Prevention.—International Technical Congress for the Prevention of Industrial Accidents and Industrial Hygiene (First), Milan, May 27-31.

Aeronautics.—International Aeroplane Exposition, Berlin, April 3-14.

International Conference on Aeronautical Legislation, Vienna, June.

International Exposition of Aerial Locomotion, Moscow, April 7-21.

Agriculture.—International Dry Farming Congress, Lethbridge, Alberta, Oct. 21-25.

Americanists.—International Congress of Americanists (Eighteenth), London, May 27. (See XXVIII, *Anthropology and Ethnology*.)

Anthropology.—International Congress of Anthropology and Prehistoric Archaeology, Geneva, Switzerland, Sept. 9. (See XXVIII, *Anthropology and Ethnology*.)

Arbitration.—Lake Mohonk Conference on International Arbitration (18th), Mohonk Lake, N. Y., May 15-17.

Archæology.—International Congress of Archaeology (Third), Rome, Oct. 9-16.

Art.—International Exposition of Art, Venice, opened April 23.

Artists.—International Congress of Artists, Paris, June 15-18.

Aviculture.—International Exposition of Aviculture, Lyon, France, April 17-22.

International Exposition of Aviculture and Aviculture Implements, St. Petersburg, Russia, Nov. 2-9.

Bible Study.—International Bible Students' Association, Washington, July.

Bills of Exchange.—International Conference on Bills of Exchange, The Hague. (See XIV, *Banking and Currency*.)

Book Industry.—International Exhibition for the Book Industry and Graphic Arts, Leipzig, May-October.

Central America.—Central American Conference (Fourth), Managua, Honduras, Jan. 4.

Chemistry.—International Congress of Applied Chemistry (Eighth), Washington and New York, Sept. 4-13. (See this title in Department XXVI.)

Cheques.—International Conference for the Unification of the Law of the Cheque (Second), The Hague, June 15. (See XIV, *Banking and Currency*.)

Commerce.—International Congress of Chambers of Commerce, Boston, Mass., Sept. 24-28. (See XIII, *Economic Conditions and the Conduct of Business*.)

Deaf Mutes.—International Deaf and Dumb Congress (Third), Paris, Aug. 1.

Editors.—International Congress of Editors, Berne, Switzerland, June 11-12.

Entomology.—International Congress of Entomology (Second), Oxford, England, Aug. 5.

Esperanto.—International Congress of Esperanto, Cracow, Austria, Aug. 11-18.

Eucharistic Congress (Twenty-third), Vienna, Austria, Sept. 11-15. (See XXXI, *Religion and Religious Organizations*.)

Eugenics.—International Eugenics Congress (First), London, July 24. (See XVI, *Eugenics*.)

Explosives.—International Conference on the Transportation of Explosives, Berne, July 8.

Expositions.—International Conference on International Expositions, Berlin, Germany, October.

Factory Inspectors.—International Convention of Factory Inspectors, Washington, June 4-8.

Fire Prevention.—International Fire Prevention Congress, New York, Dec. 16.

International Fireman's Congress, St. Petersburg, Russia, May 25-28.

International Fire and Salvage Exhibition, St. Petersburg, Russia, May-June.

Fisheries.—International Council for the Exploration of the Sea (Permanent), annual meeting in Copenhagen, October. (See XIX, *Fisheries*.)

Gas.—International Gas Exposition, Amsterdam, Holland, Sept. 14-Oct. 13.

Gynecology.—International Gynecological Congress (Sixth), Berlin, Sept. 9.

Hardware.—Hardware Exhibition, London, England, July 18-27.

Horse Show.—International Horse Show (Sixth annual), London, June 17.

Horticulture.—International Exposition of Flowers and Ornamental Plants, Nantes, France, Nov. 12-17.

International Horticultural Exhibition, London, May 22.

Hygiene.—International Congress on Hygiene and Demography (Fifteenth), Washington, D. C., Sept. 23-28. (See XXX, *Public Health and Hygiene*.)

Industrial.—International Exposition of Industries, Commerce, Agriculture and Fine Arts, Kiev, Russia, May 27-Oct. 14.

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- Insurance.**—International Congress of Insurance Actuaries (Seventh), Amsterdam, Holland, Sept. 2-7.
- International Congress of Insurance Brokers and Agents**, London, June.
- Internal-Combustion Motors.**—International Exhibition of Internal-Combustion Motors, Baku, Russia, May-June.
- International Law.**—Institute of International Law (Annual meeting), Christiania, Aug. 24-31.
- Interparliamentary Union**, Geneva, Switzerland, Sept. 18. (See III, *International Peace and Arbitration*.)
- Jurists.**—International (Pan-American) Congress of Jurists, Rio de Janeiro, Brazil, June 26.
- Latin-British.**—Latin-British Exhibition, London, May.
- Liquor Traffic.**—International Conference on the Liquor Traffic in Africa, Brussels, Belgium, Jan. 4.
- Maritime.**—International Maritime Conference, St. Petersburg, March 25.
- Maritime Law.**—International Diplomatic Conference on Maritime Law, Brussels, September.
- Mathematics.**—International Congress of Mathematicians, Cambridge, England. (See XXIV, *Mathematics*.)
- Medicine.**—International Congress of Radiology and Electrology (Sixth), Prague, Oct. 3-8.
- Miners.**—International Congress of Miners, Amsterdam, July 8.
- Moral Education.**—International Moral Education Congress (Second), The Hague, Aug. 22-27.
- Municipal Affairs.**—International Congress of Municipal Affairs, Dusseldorf, Germany, Sept. 23-28.
- Navigation.**—International Navigation Congress (Twelfth), Philadelphia, May 23-28. (See XXII, *Trade, Transportation, and Communication*.)
- Nurses.**—International League of Nurses, Cologne, Germany, August.
- Ontology.**—International Ontological Congress, Boston, August.
- Orientalists.**—International Congress of Orientalists (Sixteenth), Athens, April 7-14.
- Patents.**—International Association for the Protection of Industrial Property (Sixteenth annual congress), London, June 4-7.
- Pathology.**—International Congress of Comparative Pathology (First), Paris, Oct. 17-22.
- Peace.**—International Peace Congress (Nineteenth), Geneva, Switzerland, Sept. 23. (See III, *International Peace and Arbitration*.)
- Psychology.**—International Congress of Experimental Psychology (Fifth), Berlin, April 16-19.
- Radiotelegraphy.**—International Conference on Radiotelegraphy (Third), London, June 4.
- Radium.**—International Commission to Select a Radium Standard, Paris, March 25-29.
- Railways.**—International Conference for Security on Railways, St. Petersburg, March 25.
- Red Cross.**—International Red Cross Conference (Ninth), Washington, May 7-17.
- Religion.**—International Congress for the History of Religions (Fourth), Leiden, Sept. 9-13.
- Rice Culture.**—International Congress for Rice Culture, Vercelli, Italy, October.
- International Exposition of Irrigation and Rice Culture**, Vercelli, Italy, Oct. 10-Nov. 10.
- Rubber.**—International Rubber and Allied Trades Exposition (Third), New York, Sept. 23-Oct. 3.
- Smoke Abatement.**—International Smoke Abatement Exhibition and Congress, London, England, March 23-April 4.
- Social Hygiene.**—International Exposition of Social Hygiene, Rome, April 16.
- Socialist.**—International Socialist Congress, Basel, Switzerland, Nov. 24-25. (See XVI, *Socialism*.)
- Sports.**—International Regatta, Kiel, Germany, June 26-27.
- International Sporting and Industrial Exhibition**, Warsaw, Russia, May-June.
- Olympic Games**, Stockholm, Sweden, June 29-July 22.
- Students.**—International Congress of American Students (Third), Lima, Peru, July 21-28.
- International Congress for the Interchange of Students**, London, July 28.
- Tachygraphy.**—International Congress on Tachygraphy (Tenth), Madrid, Spain, Sept. 26-Oct. 2.
- Testing Materials.**—International Association for Testing Materials, New York, Sept. 3-7. (See this title in Department XXIII.)
- Time Reckoning.**—International Conference on Time Reckoning, Paris, Oct. 15.
- Tuberculosis.**—International Congress of Tuberculosis (Seventh), Rome, April 14-20.
- White-Slave Traffic.**—International Conference on the White-Slave Traffic, Brussels, Oct. 21.
- Opium Conference.**—The international conference proposed by the United States in 1909 and convoked by the Netherlands Government on Dec. 1, 1911, in order "to bring about the gradual suppression of the abuse of opium, morphine, and cocaine, as also of the drugs prepared or de-

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rived from these substances," completed its labors by the signature of a comprehensive agreement on Jan. 23, 1912 (see *Am. Journal of International Law*, Supp., 1912, p. 177).

The Powers represented at this conference agreed to limit the production and distribution of raw opium, to prohibit the exportation of opium to countries where its use is prohibited. They also agreed to the gradual suppression of the manufacture and use of prepared opium, to prevent contraband trade in opium, morphine and cocaine, and to exterminate the opium dens and other similar resorts frequented by persons addicted to the use of such drugs.

The nations participating in this conference were Germany, The United States, China, France, Great Britain, Italy, Japan, The Netherlands, Persia, Portugal, Russia, and Siam. The United States was represented by Bishop Charles H. Brent of the Philippines, Hamilton Wright, to whose efforts the whole movement was largely due, and H. J. Finger.

Sugar Conference.—A conference of those nations party to the Brussels Convention of 1907 for the control of the output of sugar was held at Brussels from Feb. 13 to March 17, 1912, and resulted in the signature of a protocol renewing the convention for another period of five years, beginning Sept. 1, 1913. The main provisions of this convention were agreements to restrict the payment of bounties on beet sugar, to limit the exports to European countries, and to impose penalizing import duties on bounty-favored sugar.

The purpose of this Sugar Union was to put an end to a destructive competition by those nations granting bounties. England, while adhering to the principle of discouraging the payment of bounties, found it to her advantage, in that beet sugar could be sold cheaper in Great Britain by the bounty-favored growers of other countries. This, however, meant competition with cane sugar produced in the British West Indies. Latterly it has seemed expedient to England as a non-sugar-producing nation to withdraw from the Brussels agreement though still approving its main features. The Italian

Government joined with the British Government in notifying its intention to withdraw after Sept. 1, 1913.

The protocol of March 17, 1912, granted especial privileges to Russia in regard to the exportation of sugar to European countries, in view of the difficulties experienced in disposing of the Russian crop elsewhere.

Wireless Conference.—A conference of about 30 of the principal nations of the world was held in London in June, 1912, to discuss measures to make more effective the Convention signed at Berlin in 1906 in regard to the international control of wireless telegraphic communication. Opposition to certain of the provisions of the Berlin treaty on the part of wireless companies had prevented its ratification by the United States until April 3, 1912, when the Convention was approved in order to permit the United States to take part in the conference in London. The *London Times* summarizes the new regulations, adopted July 11, as follows:

At the request of the British Government, the Conference gave special consideration to the question of the use of wireless telegraphy for the prevention of disasters at sea, and after full discussion passed unanimously a resolution proposed by the British delegation in favor of the principle of compulsory equipment of ships with wireless telegraphy.

Ships will in future be required to provide an auxiliary source of power able to work the wireless apparatus for at least six hours.

Steps have also been taken to lessen the danger of distress calls going unheard by laying down rules as to attendance on the wireless apparatus in various classes of ships. On ships of the first class a permanent watch will be required, and in this case two fully qualified operators at least must be carried. On ships of the second class, where a permanent watch is not considered practicable, the operator must listen during the first ten minutes of every hour.

Rules have also been made for both ship and shore stations to suspend work and to listen at the end of each quarter of an hour, in cases where it is likely that distress calls might otherwise not be heard.

To prevent confusion the ship in distress will in future have control over the wireless working of all stations in its vicinity, while the operators on

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every ship are now specifically placed under the authority of the captain.

Red Cross Conference.—The Ninth International Red Cross Conference met at Washington from May 7-17. Its work was directed mainly to the adoption of changed methods in the carrying on of Red Cross work, such as aid to sufferers from famine and other calamities, gifts to prisoners of war, and other kindred subjects.

Commission of Jurists.—The first meeting of the International Commission of Jurists established by the Third International American Conference of 1906, "for the purpose of preparing draft codes of private and public international law regulating the relations between the nations of America," was convened at Rio de Janeiro, June 26, 1912. Except for the adoption of a code on extradition, the Commission confined its attention principally to work of organization. The Commission was divided into six committees for the preparation of codes to be submitted at the next meeting of the Commission in Rio de Janeiro in June, 1914. The work assigned to these committees was as follows (*American Journal of International Law*, 1912, p. 931):

I. International Law:

1. Maritime war and the rights and duties of neutrals: John Bassett Moore, of the United States, chairman; place of meeting, Washington.

2. War on land, civil war, and claims of foreigners growing out of such wars: Epitacio Pessoa of Brazil, chairman; place of meeting, Rio de Janeiro.

3. International law in time of peace: Norberto Quirno Costa of the Argentine Republic, chairman; place of meeting, Santiago, Chile.

4. The pacific settlement of international disputes, and the organization of international tribunals: Miguel Cruchaga Torconal of Chile, chairman; place of meeting, Buenos Aires.

II. Private International Law:

1. Capacity, status of aliens, domestic relations, succession: Cecilio Baes of Paraguay, chairman; place of meeting, Montevideo.

2. Matters of private international law not embraced in the foregoing enumeration: Alberto Elmore, of Peru, chairman; place of meeting, Lima.

Institute of International Law.—The Institute of International Law, at its annual session in Christiania, Aug. 24-31, adopted two projects, namely, the regulations of conflicts of laws in matters of real rights in the case of bankruptcy, and the effects of war on treaties and international conventions. Its most important act was to recommend unanimously the establishment of the court of arbitral justice agreed upon at the Second Hague Peace Conference. The Institute accepted the invitation of the Carnegie Endowment for International Peace to act as general advisor to the Division of International Law. The next session will be held at Oxford, England. (*Am. Journal of International Law*, 1912, p. 939.)

Peace Congress.—The Nineteenth International Peace Congress was held Sept. 23-28, at Geneva, Switzerland. Its sessions were not wholly peaceful, owing to the interjection of discussions relative to the war of Italy and Turkey, to the operations of France in Morocco, and the question of Alsace-Lorraine. The Congress appointed a Commission of Sociology for the study of questions of political economy and social significance in international relations. It also recommended that aerial warfare should be abolished, that the Hague Conventions of 1907 should be ratified by all nations, and expressed regret over the failure of the United States Senate to ratify the treaty of arbitration with England, in its original form.

INTERNATIONAL PEACE AND ARBITRATION

JAMES L. TRYON

The organization of the world-peace movement has been greatly strengthened within the past two years. Two new factors have come into the field that exert a large in-

fluence upon public opinion: these are the Carnegie Endowment for International Peace and the World Peace Foundation. By the new constitution adopted in May, 1912, the

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directorate of the American Peace Society has been given the functions of a national peace council.

The Carnegie Endowment for International Peace, operating with the magnificent foundation of ten million dollars given by Andrew Carnegie at Washington in 1910, is under the management of a board of 28 trustees, of whom Hon. Elihu Root is president and James Brown Scott, secretary. It had its general headquarters at 2 Jackson Place, Washington. Its work is divided into three departments, each of which has a director with executive authority; the Division of International Law, Dr. Scott; the Division of Economics and History, Prof. John Bates Clark; and the Division of Intercourse and Education, Nicholas Murray Butler, president of Columbia University.

The purposes of the first division are to aid in the development of international law, to secure a general agreement as to its rules, and to promote their acceptance among the nations; to establish a better understanding of international rights and duties, together with a more perfect sense of justice among civilized nations; and to encourage a general acceptance of peaceful methods of settling international disputes. The Institute of International Law is made the official adviser of this division of the Endowment (see *International Congresses, supra*). Under the direction of Prof. John Bassett Moore, this division proposes to publish a collection of all known cases of international arbitration and mediation, as well as a complete set of arbitration treaties and of treaties containing clauses providing for arbitration. An extensive work will be done in collecting information on the work of peace and arbitration societies.

The Division of Economics and History deals with the economic and historical causes of war, with problems raised by the maintenance of military and naval armaments in time of peace, and with the unifying influences in the life of the nations. This division began its work by holding an international conference of experts in economics and history at Berne in 1911, when a programme of

topics and methods of research was elaborated and adopted.

The Division of Intercourse and Education, which is intended to popularize the results of the work of the other two divisions, will aim to educate public opinion as to the causes, nature and effects of war; to cultivate friendly feelings between the inhabitants of different countries; and to maintain, promote and assist various existing agencies working for the same object as the Endowment. It has made as its agency for propaganda in America the American Peace Society; and in Europe, the Bureau of International Peace at Berne. It has established an Advisory Council for Europe, with headquarters at Paris, under the secretarial direction of Mr. Prudhommeaux, and coöperates with Office Central des Associations Internationales established at Brussels by Senator Lafontaine. To all these agencies, some of which disburse its money to affiliated societies, it has granted subventions. It has also become financially responsible for the active American branch of the Association for International Conciliation, of which Dr. Butler is the head in the United States, the president-general being Baron D'Estournelles de Constant, of France, who founded the society. The American branch of the Association publishes and distributes monthly an edition of 75,000 pamphlets devoted to the discussion of international problems and relations.

During the past year it has sent Charles W. Eliot, president-emeritus of Harvard University, to the Far East on a mission of peace and goodwill and has brought to this country Dr. Inazo Nitobe, of Japan. It also accepted as part of its work the American tour of Baron D'Estournelles de Constant, which was made the year before under the auspices of the American Association for International Conciliation.

World Peace Foundation.—With Edwin D. Mead as secretary and managing director, the World Peace Foundation is established in headquarters at 29A Beacon Street, Boston. This is the new name of Edwin Ginn's School of Peace. Its work is

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divided into departments, each of which is actively dealing with the practical problems of international peace, and extending widely the knowledge of the peace movement among the people. It publishes newly written standard works on international arbitration and peace, as well as classics of the past, such as the orations of Sumner and Channing delivered in the early days of the peace movement. It issues periodically a large edition of pamphlets on various phases of propaganda, closely related to questions of the hour, which it distributes broadly, not only throughout the United States, but in Europe, where its work, which is conceived in a large international spirit, is also being carried on by recognized agents. It has a department for business organizations which has interested chambers of commerce in international arbitration, and at whose prompting the recent International Congress of Chambers of Commerce, which proved a wonderful peace demonstration, was held in Boston. It has a department for work among colleges and universities; a department for women, under the direction of Mrs. Anna Sturgis Duryea, who has covered a large field with her lectures, and a department for work among the churches. The addresses of President David Starr Jordan, of Leland Stanford University, one of the directors of the World Peace Foundation, are a part of its work of popularizing peace propaganda. The Foundation is about to organize more completely, under a journalist of international reputation, a universal press bureau which it has already long and ably maintained. The remarkable effort of Miss Anna B. Eckstein for millions of signatures to a world petition for international arbitration, to be presented at the next Hague Conference, is sustained by the Foundation.

American Peace Society.—Under its new constitution, the American Peace Society has two departments, one for publications, under the secretary, Dr. Benjamin F. Trueblood, who is also the editor of the *Advocate of Peace*, and the other for organization and propaganda under an executive director, Arthur Deerin Call.

The American Peace Society, its directorate now capable of enlargement so as to include not only representatives of its branch societies, but also representatives of all the peace institutions of the country, if admitted by vote of the directors, is calculated to become a national peace council. Its office will serve as a central bureau of information and unification for the peace forces of the country. The headquarters of the Society are at 313-314 Colorado Building, Washington, D. C., to which they were removed in April, 1911, from Boston, where they had been located since 1837. The president of the Society is Hon. Theodore E. Burton, of Ohio.

Other Agencies of Promotion.—In 1911-12 a vigorous campaign, which was the most educational in the history of arbitration in America, was carried on for the ratification of the arbitration treaties, that were negotiated between Great Britain, France and the United States (see *AMERICAN YEAR BOOK*, 1911, pp. 93-96; and *International Notes*, *supra*). Two important peace gatherings were held at Geneva, Switzerland, in September, 1912, the Nineteenth Universal Peace Congress and the seventeenth conference of the Interparliamentary Union. The Third National American Peace Congress was held at Baltimore, in May, 1911, and another congress is projected in 1913. The American Society for Judicial Settlement of International Disputes met at Washington, 1910; Cincinnati, 1911; and Washington again, 1912. This society has greatly strengthened the movement for a permanent court of international justice. The American School Peace League has extended its branches into every part of the United States and its secretary, Mrs. Fanny Fern Andrews, is initiating a similar organization in Europe. Three large and influential committees have been formed in the United States, Canada and Great Britain to prepare a programme for the celebration of the century of peace among the English-speaking peoples in 1914-15. The Federal Council of the Churches of Christ has created a commission for peace work among religious organizations,

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which began its activities in connection with the arbitration treaties.

Arbitration.—Meantime the cause of arbitration has steadily increased its hold upon the public mind in consequence of the growing utility of the permanent Court of Arbitration at The Hague, as well as the increasing number of cases that have been decided by other tribunals. The Savarkar case between Great Britain and France, tried by The Hague Court in 1911, was followed by a case of old war claims, arrears of interest on Russian indemnity, between Turkey and Russia, the Canevaro claims case between Italy and Peru, and a prize case between France and Italy is coming from the war between Italy and Turkey (see *International Relations, supra*). The Chamizal case between the United States and Mexico has been adjudicated by specially appointed commissioners outside The Hague Tribunal (see *AMERICAN YEAR BOOK*, 1911, p. 87). The Alsop claims case between the United States and Chile (*ibid.*, p. 101) was settled by King George V. Several other important cases are pending in special tribunals.

Preparations for the Third Hague Conference.—According to a resolution adopted by the Second Hague Conference, it was agreed by the nations that a committee should be appointed by them to prepare a programme for discussion and an order of parliamentary procedure to be used at the Third Hague Conference. Steps are now being taken by the nations to have the committee appointed. It is impossible at this time to forecast the probable programme of topics for discussion; but so far as they have appeared in the writings of publicists or the resolutions of peace conventions, it may be said that an effort is likely to be renewed to institute a permanent court of international justice on substantially the same lines as the Court of Arbitral Justice, the draft for which was adopted by the nations in 1907, but the actual operation of which has been delayed owing to the failure of the powers to agree upon a method of appointing its judges. An earnest attempt was made among the great powers by Secretary Knox

to combine the jurisdiction of this court with the International Prize Court, but as the convention establishing the latter court has failed of ratification in Great Britain, owing to defeat of the Naval Prize bill in the House of Lords (*AMERICAN YEAR BOOK*, 1911, p. 131), the proposed combination has been postponed. The so-called Permanent Court of Arbitration, however, is likely to remain substantially as it is, a court of arbitration, not in theory strictly judicial in its methods, but capable of admitting the methods of diplomatic adjustment.

There are more than 140 arbitration treaties between the nations, signed in pairs, the great majority of which contain reservations from arbitration of questions of national honor and vital interests; but there is a movement, as evidenced by the recent arbitration treaties negotiated by President Taft, to eliminate these clauses in future treaties. It is probable that a proposal will be made at the Third Hague Conference, like that which was attempted in 1907, for the adoption of a world treaty of obligatory arbitration for disputes over questions of international law and the interpretation of treaties.

The question of the limitation of armaments, in so far as a formula for proportionate disarmament or an international agreement is concerned, is no nearer solution than in 1907. The limitation or prevention of warfare in the air is akin to this proposition; but, although there is a movement among publicists to renew the resolutions of both Hague Conferences forbidding the dropping of projectiles from balloons, and a desire has been manifested to limit them to scouting purposes, a beginning has been made in the use of airships in actual warfare, and their construction for military purposes grows apace. For discussions of the proposals for the consideration of the committee on the Third Hague Conference programme, the report of the proceedings of the American Society of International Law, the report of the Lake Mohonk Conference on International Arbitration, and the records of the Interparliamentary Union for 1912 may be consulted.

IV. FOREIGN AFFAIRS

CENTRAL AMERICA AND THE CARIBBEAN

DUDLEY HARMON

COSTA RICA

Administration.—No change of administration occurred, President Ricardo Jimenez continuing in office. A convention was concluded with the United States and ratifications exchanged providing for the status of naturalized citizens of one country who have returned to the country of origin. The latest census figures, Jan. 1, 1912, give the population as 388,266.

Finance.—The budget for 1912-13 estimated receipts at \$4,138,500, and expenditures \$4,126,694. Any surplus is to be applied to the public debt. The national legislature authorized the establishment of banks of rural credit, for the purpose of making loans on farm lands and encouraging agriculture by supplying farmers with capital in small amounts. Single loans are not to exceed 500 colones in amount (colone equals \$0.465 U. S. gold); 25,000 colones were appropriated for founding the banks.

Public Works and Commerce.—President Jimenez announced that the new Pacific Railway, from San Jose to Punta Arenas, has been put in such shape that succeeding administrations will need to bear only the burden of maintenance and operation. Grape culture was begun under the direction of the government which obtained California vines for the purpose. Brazilian rubber plants were imported and extension of rubber growing sought. Steps toward the colonization of the Golfo Dulce region were taken.

The 91st anniversary of Central American independence was celebrated at San Jose Sept. 15.

CUBA

Administration and Politics.—The year was marked by great political activity, culminating in the national elections Nov. 1, and complicated by an agitation of the Veterans' Association and a negro revolt, both of which were closely watched by the United States (see III, *Cuba*). The elections resulted in the return of the Conservative ticket, General Mario G. Menocal, President, and Jose Varona, Vice-President. The Liberals protested the legality of Gen. Menocal's election in the Congress. Gen. Menocal announced that as President retrenchment in the government service and further trade reciprocity with the United States would be among his leading policies.

Finance.—The budget for 1912-13 estimates the receipts at \$37,940,200, and the expenditures at \$33,974,147. President Gomez requested of Congress authority to negotiate a loan of \$11,000,000, but no action has been taken. During the first half of 1912 customs receipts amounted to \$13,346,309. The annual subsidies to the provinces from the federal Government were continued, but provision was made for their reduction by 20 per cent. annually for five years, until extinguished, beginning July 1, 1913. The Territorial Bank of Cuba was chartered Feb. 1 (see III, *Cuba*). Its purpose is to lend money on agricultural properties to farmers on easy terms, in order to promote agricultural development. The Franco-Cuban Credit Foncier was organized, with a capital of \$1,500,000.

Railways and Public Works.—The first section of the railway from Ci-

fuentes to Esperanza was opened. A new corporation, known as the National Railways of Cuba was organized, and incorporated in Delaware by the United States Corporation Co.. The new company, composed of Cuban and American capitalists, will take over certain existing lines, and will construct roads between Nuevitas and Caribarien, and from Camaguey to Santa Cruz del Sur. The government has authorized a subsidy of \$6,000 a kilometre for this new construction. Harbor improvement work was carried on through the year by the Cuban Ports Improvement Co. in all the chief ports of the Republic. The company has a 30-year concession, plans work to the amount of \$15,000,000, and is receiving certain harbor dues collected for it by the Government. Work on the new national palace, to cost \$1,117,000 was begun in January, and the corner-stone laid May 20.

Agriculture and Commerce.—The sugar crop amounted to about 1,900,000 tons. The tobacco crop was large. Legislation was enacted providing that all boxes or packages of tobacco manufactured in Cuba bear a special certificate of origin, for the protection of Cuban tobacco factories. The year was marked by a steady inflow of foreign capital for investment in agricultural, mining, and commercial projects. A survey of the small islands off the south coast was ordered, with a view to development.

Education.—Teaching of English in the public schools was ordered limited to the large cities, owing to a scarcity of teachers of the language. A national military academy was established.

The "Maine".—On March 16, the hull of the U. S. battleship *Maine* having been successfully raised by U. S. Army engineers, was towed three miles outside Havana harbor and sunk. The *Maine* was convoyed by American warships and appropriate ceremonies were witnessed by Cuban and American officials. Bodies of 59 men last recovered were placed on the U. S. S. *North Carolina* to be brought to the United States for burial. One of the turrets and two of the *Maine's* big guns were given to the Government of Cuba and will be

used in the erection of a monument to the memory of the *Maine* dead.

DOMINICAN REPUBLIC

Administration.—Eladio Victoria, made Provisional President Dec. 6, 1911, was elected President for a six-year term Feb. 5, 1912. About the same time a revolutionary movement was begun in the north, near the Haitian border. Under the leadership of Horatio Vasquez and others, the revolution gained force, until a large part of the border country was controlled by the revolutionists, resulting in the forced suspension of the border customs house at Dajabon and other places. This led to the dispatch of a special commission and a force of marines from the United States to restore the customs service (see III, *Dominican Republic*). In November a compromise was reached between the government and the revolutionists, through the commissioners, and hostilities ceased. President Victoria presented his resignation to Congress convened in special session Nov. 26; Archbishop Nouel was elected Provisional President and installed Dec. 1, to hold office until general elections can be held. The reopening of the border customs houses and the establishment of the customs patrol on the Haitian-Dominican frontier were the first measures undertaken, together with a programme of administrative reforms agreed upon.

Finance.—Despite the political unrest, the national revenues were not materially lessened. The total receipts for 1911-12, under the receivership established by the United States, were \$3,636,641, while collections from Jan. 1 to Sept. 30, 1912, were \$2,764,778. The National Bank of Santo Domingo, capitalized by Americans at \$500,000, was opened in Santo Domingo City Jan. 29.

Commerce and Development.—The plans for a railroad to be built from Santo Domingo City to Cibao, 128.9 km., at a cost of \$18,010 per kilometre, were prepared. Several corporations organized in the United States were granted privileges for large scale agricultural operations. More than 1,700 acres were planted in cotton, and the indications are that

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this soon will become an important crop. A government tobacco experiment station was established. Puerto Plata made application for permission to issue bonds to the amount of \$100,000 for port improvements. Provision was made for the construction of a government wharf at Santo Domingo City, to cost \$156,696. Immigration laws were revised and emigrant stations established in Europe to promote colonization. According to the Bureau of Statistics, the population on June 30, 1912, was 675,000.

GUATEMALA

Administration.—There was no change in administration, President Manuel Estrada Cabrera having been reelected President for another term beginning March 15, 1911. The boundary convention with Honduras was extended two years to March, 1914. A parcels-post service was inaugurated early in the year. The Congress ratified the conventions adopted at the Fourth Central American Conference at Managua, Jan., 1912; the convention of Rome for the establishment of a permanent international agricultural institute; and the five conventions adopted at the Pan-American Conference at Buenos Aires, 1910. The new national military academy was opened June 30, at Guatemala City, and the establishment of a school of aviation authorized. Gains were made in the number of primary and secondary schools.

Finance.—The 1912-13 budget estimates expenditures of 43,020,332 pesos (the value of the peso in Guatemala fluctuates, varying from \$0.06 to \$0.10 U. S. gold). The project for a loan with which to reform the currency and refund the foreign debt was discussed and proposals were received from British and American bankers, but no action has resulted.

Railways and Commerce.—The Guatemalan railways and certain railways in Salvador were consolidated into the International Railways of Central America by a group of American capitalists. The corporation has concessions from the governments of Guatemala and Salvador for the operation of existing lines and

others to be constructed. Continuous connection between the railways of Mexico, Guatemala, and Salvador is intended. The Pan-American railway was completed to Mariscal, on the Guatemalan border, from the Mexican side, and on the Guatemalan side to Las Cruces, 68 km. from Mariscal. Connection is expected during 1913. Great prosperity was enjoyed in the coffee and sugar industries.

HAITI

Administration.—President Cincinnatus Le Conte died Aug. 8 as the result of injuries received when the national palace at Port au Prince was destroyed following the explosion of powder magazines in the basement. Gen. Tancrede Auguste was elected President to succeed him, and an extraordinary session of Congress called for Aug. 19. The Congress appropriated \$100,000 for the construction of a new national palace and \$40,000 for a new Senate building. Other acts of the Congress were the reorganization of the consular and diplomatic service, and the establishment of a legation at The Hague; ratification of a parcels-post convention with France; establishment of manual training schools for boys and girls, and provision for the extradition of fugitives from justice.

Finance.—On Aug. 19 the President approved a law withdrawing 6,000,000 gourdes (\$1.00 U. S. gold equals 3.25 gourdes) from circulation, 2,000,000 gourdes to be withdrawn each year for three years. The National Bank of Haiti will supervise the destruction of the withdrawn currency. Bonds to the amount of \$674,000 were issued for the temporary loan contracted for late in 1911. The budget for 1912-13, approved Aug. 19, estimates the receipts at 7,571,082 gourdes and \$3,914,480 U. S. gold, and the expenditures at 8,871,409 gourdes, and \$3,907,290 U. S. gold, or, receipts, \$6,244,025 U. S. gold, and expenditures, \$6,636,954 U. S. gold. The Congress approved a contract for the establishment of a land bank.

Railways and Commerce.—The first section of the Haitian Railway, from Cape Haitien to La Grande Ri-

vière, was completed and accepted by the government. The section from Gonaives to Ennery is nearly completed. The coffee and cacao crops were reported unusually large.

Boundary Dispute.—Diplomatic representatives of Haiti and the Dominican Republic met several times at the State Department, Washington, to arrange a protocol preparatory to submitting the Haitian-Dominican boundary dispute to arbitration, in accordance with the agreement of 1911, in which the United States was accepted as mediator, but no protocol has yet been agreed upon.

HONDURAS

Administration.—On Jan. 8, Gen. Manuel Bonilla was elected President for four years, succeeding Francisco Bertrand. The new administration agreed with Great Britain for the extension of their treaty of peace, commerce and navigation for one year, to April 6, 1913. A commercial school for girls and a school for teaching the manufacture of straw hats were established in Tegucigalpa. Congress founded 13 additional scholarships for Honduran students abroad. Six of these will study engineering in the United States.

Finance.—The budget for 1912-13 shows the estimated receipts 13,140,415 pesos, and estimated expenditures of 13,095,101 pesos (the peso in Honduras is equivalent to \$0.451 gold). The Government entered into a contract with Whitney Bros., of New Orleans, for a loan of \$500,000, bearing five per cent. interest and secured by the revenues of the port of Puerto Cortez. During the year customs revenues from all sources, especially at Puerto Cortez, showed a healthy recovery.

Railways.—On Feb. 9, the new administration took over the single railway in Honduras, from Puerto Cortez to Camayagua, alleging that W. S. Valentine, concessionaire, had failed to fulfill his contract with the government. Mr. Valentine has not conceded the right of the government to take over the road and still claims ownership (see III, *Honduras*). A concession was granted for the construction of a steam or electric rail-

way from Truxillo to Juticalpa and extension to Tegucigalpa. The concessionaires agree to build wharves at Truxillo.

MEXICO

The Revolution.—The surrender of Gen. Reyes to Government authorities at Linares, Dec. 25, 1911, did not, as was hoped, mark the end of revolt against the newly installed Madero administration. Several semi-organized rebellions against federal authority existed at the opening of the new year. In the South, Emiliano Zapata was most active, and though operating near Mexico City has not yet been subdued.

Early in February general conditions throughout the north of Mexico indicated a quite general popular sympathy with the formative revolution against President Madero. This was generally attributed to the disappointment of those who had believed that Madero's inauguration would bring an immediate and free distribution of lands. Americans were reported to be facing serious situations throughout Mexico, but especially in Chihuahua and Durango. On Feb. 27, revolutionists under Gen. Campa took Ciudad Juarez, opposite El Paso, Texas. Within a week, Gen. Pascual Orozco, commander of the Madero forces at Chihuahua, went over to the revolution, and became military and civil head of the government set up in Chihuahua.

In the meantime, federal forces were engaged with disorders in the southern states, and in preparations for a campaign against Orozco in the north. Early in June, Gen. Huerta led the federal armies from Torreon to go to Chihuahua, Orozco having been defeated at the battle of Relano. Orozco began a retreat northward, and rebel activities in northern Chihuahua increased. At the same time, the situation in the state of Oaxaca became most acute, and Mexico City seemed threatened. July 4 the rebels were again defeated at Bachimba, and the northward retreat became more general. Chihuahua was abandoned as the revolutionary capital, and Juarez became the headquarters, Gen. Orozco appearing

there July 11. The federals took Chihuahua July 9, and started north again for Juarez. By the end of July Orozco's army had broken up into small bodies. Led by Salazar, Rojas, Campa, and Escabosa, they made their way across the mountains into the rich state of Sonora. Aug. 16 Orozco and the last remnant of his army left Juarez, and the federals occupied the city Aug. 20, but did not at once pursue the campaign into Sonora.

The disintegrated revolutionary forces continued marauding throughout northern Sonora. Large American mining properties and many Americans at El Tigre, Cananea, and Nacazari were threatened, as was also the border town of Agua Prieta. Early in September the federals began their campaign in Sonora, sending many of their troops into that state *via* Texas and New Mexico. The exodus of Mormon agricultural colonists, mostly Americans, which began in July when the revolutionary retreat began, continued, and hundreds of Mormons in northern Sonora abandoned their farms and fled to the United States. The federals garrisoned the more important points in Sonora and checked considerably the rebel operations.

Conditions in the South grew worse, and serious disorders prevailed in the states of Puebla, Mexico, Vera Cruz, Michoacan, and Morelos, while Oaxaca, capital of the state of that name, was threatened by a rebel force numbering 5,000. Revolutionary activities were renewed in northern Zacatecas, Durango, San Luis Potosi, and in northern Coahuila, where Gen. Orozco was supposed to have gone from Juarez. Nothing definite was heard of Orozco until December, when he reappeared in northern Mexico, capturing the town of Casas Grandes on the 18th.

In late September an attempt was made to concentrate the rebel forces in Sonora, but it soon became apparent that the former revolutionary army had permanently broken up into hundreds of small bands, marauding on all opportunities, and recognizing no authority. Early in October Escabosa, leader of one of these bands, surrendered to federal authorities.

Others returned to Chihuahua, and Salazar renewed his raiding in that state just south of the United States border. Disturbances in Sonora ended, except for local disaffection among the Yaqui Indians.

On Oct. 16 Gen. Felix Diaz, nephew of former President Diaz, and former chief of police of Mexico City, captured Vera Cruz city by a *coup d'etat*. A week later, however, he was made prisoner in Vera Cruz by Gen. Beltran, commanding federal troops rushed to Vera Cruz from Torreon, and the Diaz revolt utterly collapsed. Gen. Higinio Aguilar, formerly a federal commander, had previously begun a revolutionary movement in Vera Cruz, and continued his operations in the state of Puebla after Diaz' fiasco. Since the collapse of the Diaz movement, the Government has gained considerable prestige, but there is yet no indication of the permanent suppression of the numerous semi-organized and unassociated bands of marauders and brigands who are promoting lawlessness through a great part of the republic. (See also III, *Mexico*.)

On Sept. 16, President Madero informed Congress that the strength of the army was as follows: 107 generals, 6,236 officers, and 49,332 men.

Finance and Railways.—The budget for 1912-13 estimates the expenditures at \$55,500,000, an increase of \$2,870,000 over figures for the previous year. A loan of \$10,000,000 was obtained from New York bankers early in 1912 and President Madero later intimated that another loan might be necessary. The customs revenues for 1911-12 were approximately \$22,138,700, showing a slight decrease as compared with customs receipts of approximately \$24,915,000 for the previous fiscal year. Receipts of the National Railways for the fiscal year were \$32,385,700. The Tlaxcala branch of the Southern Railway was opened, and during the year about 1,000 miles of new railways were under construction at an estimated cost of \$14,000,000. Because of the heavy military expense, work on the new \$18,000,000 national capitol building and the new \$12,000,000 national theatre was practically suspended.

Public Lands and Agriculture.—A presidential decree of Feb. 24 provided for the immediate survey of 10,000,000 hectares of government lands, in the states of Coahuila, Chihuahua, Chiapas, Durango, Guerrero, San Luis Potosi, Sonora, Tabasco, Vera Cruz, and Yucatan, and territories of Tepic and Lower California. It is planned to sell these lands at from two to 12 pesos per hectare, and needy colonists are to be given tracts up to 50 hectares on condition of cultivation for five years. In Chihuahua the surveys have been completed and preparations are being made for distribution of the lands. An agrarian commission is supervising the work, and investigating problems of rural life. The Loan Bank for Irrigation Works and Encouragement of Agriculture, established 1908, was authorized to make small loans to colonists and new development companies on limited terms. Extensive concessions for water rights were granted to promote irrigation and agriculture. An extensive programme of harbor improvements was inaugurated.

Despite the internal disturbances, Mexican industries made satisfactory progress, and investment of foreign capital continued, though to a lesser degree than in previous years.

NICARAGUA

The Revolution.—From August to November, Nicaragua was torn by a revolution, of which Gen. Luis Mena, Minister of War, was at first the leader. Though Gen. Mena had been elected President by the legislature, in October, 1911, for the four-year term beginning Jan. 1, 1913, his election was questioned in view of the Dawson Conventions, by which Mena and others agreed that a popular election should be held for the choice of successors to Provisional President and Vice-President Juan Estrada and Adolfo Diaz. On July 29, Mena revolted, and the next day withdrew from Managua, after some fighting, taking part of the government troops with him. He went to Granada, where his son Daniel Mena had seized control of the city. Mena seized the railway property and steamers operating on Lake Nicara-

gua, which were property of an American corporation. When United States Minister Weitzel demanded protection for American life and property, President Diaz requested American assistance and a force of marines, under Rear-Admiral South-erland, was dispatched to Nicaragua (see III, *International Relations*).

Gen. Zeledon, former Minister of War under Zelaya, who, with other Zelayistas, had returned to Nicaragua, began a 48-hour bombardment of Managua on Aug. 11. Many of the inhabitants were killed, and the Government defenders lost heavily. On Aug. 19, Zelayistas took Leon, annihilating the government force of 500 under Gen. Duron. A United States forces proceeded to regain control of the railway from Corinto to Managua, and by Sept. 8 regular communications had been established. On Sept. 25 Admiral Southerland accepted the surrender of Gen. Mena, with 700 men, at Granada, and regained control of all the railroad and steamship property. Gen. Mena, who was seriously ill, and his son, were, at their own request, taken to Panama, and placed in the American hospital at Panama, where they still were on Dec. 31. Food supplies, donated by the American Red Cross and the United States forces, were distributed in Granada, where there was much suffering.

The Nicaraguan government troops had won some successes, but failed in trying to dislodge Gen. Zeledon and 800 men from the Barranca forts, near Masaya. As Zeledon's position threatened the railway communications between Managua and Granada, Admiral Southerland notified Zeledon, that he must evacuate the Barranca. Zeledon refused, and on Oct. 4 American forces took the place, after a conflict lasting 37 minutes. Four Americans were killed, and the revolutionists' losses were heavy. Gen. Zeledon was killed by Government troops while in flight to the Costa Rican border. The same day marines took Chichigalpa, after a brief conflict. On Oct. 6, Lieutenant-Colonel Long, in entering Leon, was attacked, and three Americans and 50 revolutionists were killed.

With the taking of Masaya, Gra-

nada, Leon, Chichigalpa, and also Chinandega, the United States forces gained absolute control of the entire region along the railway from Corinto to Managua and Granada, and fighting came to an end. Withdrawal of the United States forces began Oct. 25, and continued until by Dec. 1 only a legation guard of 400 marines was left at Managua.

On Nov. 2 elections were held throughout Nicaragua, and resulted in the choice of Provisional President Adolfo Diaz for a four-year term beginning Jan. 1, 1913, and Fernando Solorzano, Vice-President. A new legislature is to be elected in the near future.

Finance.—An additional loan of \$500,000 was obtained from the New York bankers early in the year for strengthening the fund for reforming the currency. The bankers also agreed to provide \$225,000, to be paid in monthly installments of \$30,000 to make up the deficit pending the complete reorganization of the national finances (see *AMERICAN YEAR BOOK*, 1911, p. 96). After the revolution was ended, an arrangement was made with the foreign bondholders whereby the government was tided over the immediate financial crisis. The National Bank of Nicaragua was opened for business in Managua in October. It will act as fiscal agent of the government and supervise the reorganization of the currency. The new monetary unit will be the "cordoba," of 100 centavos, and equivalent to \$1.00 U. S. gold.

Commerce and Industry.—The revolution was a great setback to agriculture and commerce in western Nicaragua. On the east coast, banana plantings were increased. Contracts were let for the construction of wireless stations at Managua, Granada, San Carlos, San Juan del Norte and Castilla. Legislation was enacted limiting the exploitation of national forests and limiting contracts for labor to one year's duration. The fisheries dispute with Great Britain was satisfactorily adjusted. A parcels-post convention was concluded with the United States.

Fourth Central American Conference.—This Conference met at Managua, Jan. 1, 1912. Five conventions

were adopted, providing, subject to ratification by the several governments, for annual reports from each government to future conferences; regulations for a unified consular service for the Central American republics; improvement and security of telegraphic service between the republics; establishment of a postal and telegraph money-order service and establishment of joint commissions of Central American relations. The Conference adjourned to meet at San Jose, Costa Rica, Jan. 1, 1913.

PANAMA

Administration.—Elections were held on Aug. 2, resulting in the choice of Dr. Belisario Porras, former Minister to the United States, and he was inaugurated President Oct. 1. At the request of the Administration and of the Porras party, the registration of voters and the elections were supervised by an American commission, consisting of Minister Percival H. Dodge, and officers of the United States Army and Marine Corps stationed on the Canal Zone.

Commerce and Education.—A large tract near Bocas del Toro was granted to the Laymen's Mission Society, a German-American organization, for colonization purposes. Congress was petitioned to grant a concession for the establishment of a cotton factory, capitalized at \$200,000. Agriculture and stock raising made satisfactory progress. The National Institute of Panama was placed under the direction of an American educator, Dr. E. G. Dexter. Matriculates of the public schools numbered 19,362, and the average attendance was 14,511. The population, including the Canal Zone, is 386,745.

Boundary.—The survey of the Costa Rica-Panama boundary line, preparatory to the adjustment of the controversy by arbitration, was completed late in the year.

SALVADOR

Administration.—President Manuel Enrique Araujo continued in office for the second year of his four-year-term. The year has been most peace-

ful and prosperous. The population, according to the census completed Jan. 1, 1912, is 1,161,426. The establishment of two colleges for girls, and three elementary industrial schools, and the construction of a number of public buildings were authorized by Congress. Projects for the erection of wireless stations to afford communication with points in Nicaragua and Honduras were approved.

Finance.—The budget for 1912-13 places the receipts at 13,140,415 pesos, and the expenditures at 13,095,101 pesos (peso in Salvador equals \$0.391 gold). On the first of the year, the foreign debt was £1,461,552, or £344,658 less than the year before. Congress instructed the President to contract for an agricultural bank, to promote agriculture by

making small loans to farmers, at not more than 5 per cent. interest.

Railways and Commerce.—On July 6 the railroad from La Union to San Miguel was opened to traffic. The international bridge at Sumpul, connecting Salvador and Honduras, was opened in December. The Pacific United Fruit Co. was organized to develop banana lands on the west coast of Salvador for supplying the Pacific coast markets of the United States. Cotton cultivation was undertaken on a small scale with satisfactory results. For the 1912 coffee crops, 166,039 acres were under cultivation. Seventy million pounds were produced, of which it was estimated 60,000,000 lb. would be exported. The first national agricultural and stock exposition was held in the capital, San Salvador, Aug. 1-6.

SOUTH AMERICA

CHARLES LYON CHANDLER

ARGENTINA

Politics.—The year 1912 was unmarked by many events of a political nature, the electoral reforms introduced by President Saenz Peña and two cabinet changes being the chief events. Great progress has been made on the delimitation of the Argentine-Bolivian frontier, while the accurate surveying of the Argentine-Chilean boundary, by the joint commission of those countries, has been continued.

Commerce and Industry.—Business conditions were good throughout the year. The 20,000 miles of railway carried more passengers and freight than ever before. Great progress was made on the second transcontinental railway line, which will extend across southern Argentina from Port San Antonio to Puerto Montt, in Chile; more than half of this line has been completed. Foreign commerce was greater than ever before, totaling over \$800,000,000 gold. Buenos Aires had 1,401,863 people, and Rosario over 225,000 at the close of 1912.

Many new sources of national wealth were scientifically developed in 1912. Dry farming made rapid

progress under the supervision of United States experts. The hydro-mineral wealth of Argentina is to be developed, as are the fisheries, and tobacco and cotton culture; the latter received a great impetus during the year.

United States interests continue to dominate the meat-producing and packing industries, which continue to be one of the nation's greatest sources of wealth. Argentina is now the second largest country in the world in total number of sheep; the wool market was good in 1912. A steady current of immigration provided a sufficiency of labor. The group of European and United States financiers headed by Percival Farquhar, of New York, whose activities in Brazil are well known, secured control of the Entre Rios railway system.

Education.—Argentina spent more money on education than on her army and navy combined in 1912, all branches of education receiving large grants. The La Plata University, founded in 1905, is making astonishing progress, of special interest, owing to the efforts of the federal Government to make La Plata a "college town" such as exists in the United States. The prepara-

tory department of the university, under the able direction of Señor Ernesto Nelson, who was educated in the United States, is modeled after the large boys' boarding schools in the United States, and has met with surprising success.

BOLIVIA

President Villazon continued in power during 1912, a change in the cabinet taking place on Sept. 20, when Dr. Juan Misael Saracho became Minister for Foreign Affairs and Worship, Dr. Claudio Pinilla, Minister of Government and of Public Works, Dr. Alfredo Ascarrunz, Minister of Finance, Dr. Horacio Rios, Minister of Justice and Industry, Dr. Carlos Calvo, Minister of Instruction and Agriculture, and Dr. Juan Maria Zalles, Minister of War and Colonization. Earlier in the year Macario Pinilla was appointed special envoy of Bolivia to The Hague to represent the interests of Bolivia in arbitration proceedings with Chile regarding titles to the nitrate properties in the Toco district. In May, 1912, the railway line from Antofagasta, Chile, to Rio Mulato, Bolivia, was opened with great celebration. On Aug. 6, 1912, an *ad referendum* commercial traffic convention was concluded between Bolivia and Chile to be effective five years. A preliminary survey was made of the entire lines of the Chimore Railway, the work having been divided into five sections. The railway between Tupiza and La Quiaca, on the Argentine frontier, which will, when completed, make through railway connection between La Paz and Buenos Aires in about 90 hours, is now being constructed and will be opened in 1914. Extensive petroleum deposits of good quality have been found at Calacoto, on the Arica-La Paz Railway. Commercial conditions continued much as in previous years.

BRAZIL

Death of Baron Rio Branco.—By far the most important political event in Brazil in 1912 was the death on Feb. 10 of Baron Rio Branco, Minister of Foreign Affairs. During the

ten years of his incumbency of that office he had secured for Brazil territory as large as France and had made his influence felt throughout America. His successor is Dr. Lauro Müller, a South Brazilian of German parentage, who has long been prominent in political circles. Rio Branco's death was the signal for an unusual *rapprochement* between Argentina and Brazil, ex-President Campos Salles of Brazil being sent as Minister to Buenos Aires, while ex-President Roca of Argentina came to Rio de Janeiro in a similar capacity.

Politics and Legislation.—The differences between President Fonseca's opponents and the Government in power continued, and the President's own party was not free from differences. General Vespasiano de Albuquerque succeeded General Mena Barreto as Minister of War in April, and Dr. Barbosa Goncalves was appointed Minister of Public Works in January. The ratifications of the treaty of commerce and river navigation between Bolivia and Brazil were exchanged. In July an important fish commission was created, with the especial purpose of protecting the Brazilian whale industry. Humanitarian and advanced legislation regarding the Brazilian Indians, who are more than 1,200,000 in number and some of whom are said to be very intelligent, was enacted.

Commerce and Industry.—The year was, on the whole, a good one commercially and financially. Of Brazil's two leading exports, coffee and rubber, the latter slightly decreased and the former remained about the same, the coffee crop for the year ended, June 30, 1912, being: Rio de Janeiro, 2,593,127 bags; Santos, 9,976,266 bags. The plans for valorizing the coffee crop of Brazil, of which the United States is now the second largest customer, fell through (see III, *International Relations*). More and more of Brazil's exports are being developed, and each year the relative amounts of coffee and rubber, as compared with minor, but growing articles, decline.

On Jan. 1, 1912, the foreign debt of Brazil was \$461,846,033, as compared with \$422,645,855 on Jan. 1,

1911. \$195,103,485.32 worth of paper money was in circulation on June 30, 1912, and there were gold notes issued against actual deposits of gold to the amount of \$111,196,227 in circulation on Aug. 1, 1912. There are now 3,500 industrial establishments in Brazil employing 175,000 persons, capitalized at \$275,000,000. Fully 40 per cent. of these establishments are textile factories, an industry which has recently made great progress.

Transportation.—A section of 226.17 miles of the very important Madeira-Mamore River Railway was completed in September, 1912, and it is expected that the road will be finished by January, 1913, opening up the vast and rich regions of Eastern Bolivia and Matto Grosso. Other important railways under construction are those from São Paulo to the State of Goyaz; from the port of Victoria to Minas Geraes, which will traverse territory extremely rich in iron ore; and the Rio de Janeiro-Pará line of the Central Railway of Brazil, owned by the Brazilian Government, which has reached Piraporá. Over 11,843 ft. of the new quays of Rio de Janeiro were opened to traffic in 1912 and 11 large warehouses with inside measurements of 41,860 sq. ft. were opened; seven more warehouses are to be opened by Jan., 1913.

Parcels-post systems were opened between Brazil and the United States, and with several other countries.

Education has proceeded rapidly. Eighty-three schools have been authorized in São Paulo, at a cost of \$2,356,023.

CHILE

Administration.—Though in somewhat feeble health, President Barros Luco continued his constructive policy of national progress. Many cabinet changes occurred during the year. Abraham Ovalle succeeded José R. Gutiérrez on Jan. 6 as Secretary of the Interior, and on May 20 a Liberal—Liberal-Democratic coalition ministry came into power. This ministry was succeeded on Aug. 9 by another, as follows: Guillermo Barros, Prime Minister and Minister of the Interior; Antonio Huneeus,

Minister for Foreign Affairs; Enrique Villegas, Minister of Justice and Public Instruction; Oscar Viel, Minister of Industry and Public Works; Manuel Rivas, Minister of Finance, and Claudio Vicuña, Minister of War and Marine.

Army and Navy.—A United States Army officer was invited by Chile to assist the organization of the coast artillery. Orders for two new Dreadnoughts were placed in England, though other military supplies were ordered from the United States.

Railways.—The longitudinal railway was opened to its southern terminus, Puerto Montt, on June 12, 1912, and in November Coquimbo and La Serena were connected by rail. The first complete passenger train ever built in Chile was completed, as was the first double-track railway bridge in Chile. The Arica-La Paz railway was finished April 2, 1912. One hundred and eighty new schools were opened; 375,274 pupils are now attending the elementary schools.

Commerce and Industry.—A general revision of the tariff was made, to take effect April 23, 1912. It increases the duties, being strictly protective. The revenue thus received will eliminate the growing annual deficits. Postal rates were reduced. Banking conditions continued good, except the growing depreciation in the value of Chilean paper money. The 72 savings banks had \$5,249,509 deposited therein, in 254,920 separate accounts, double the number in 1908.

Agricultural conditions continued good; there was a surplus of wheat and barley for export, while the growth of the canning factories was noteworthy. Chilean canned fruit is now competing with that from the United States in Peru and other countries. There were also increased outputs of nitrate and wine, 52,839,970 gal. of the latter being produced.

COLOMBIA

President Restrepo continued in power throughout the year, though there were several Cabinet changes. His Government is desirous of having foreign banks establish themselves in Colombia, and he urges greater

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economies and reforms in revenue collection in his message to Congress, as the expenses have exceeded the budget for 1912 by \$454,033. He strongly recommends the country's doing everything possible to take advantage of the Panama Canal, especially by building a railroad from Girardot to Cali.

During the year the sanitary condition of many of the ports of Colombia, particularly of Buenaventura, was improved, and prison conditions bettered. The administration on the archipelago of San Andres and Providencia was reorganized. The census of March 4, 1912, showed the population of Colombia to be approximately 5,000,075 people. The wireless station at Santa Marta was opened and plans are on foot for a greater development of wireless telegraphy. Progress was made in colonization; the districts of La Goajira, Putumayo and Caqueta were founded and officers sent to take charge of them.

The railroad from Buenaventura to Cali was opened in December, 1912. The customs receipts at Buenaventura doubled in 1912. An important monetary change was the ordering of pounds and half-pounds to be coined as the gold standard. Four young Colombian officers were sent to study in the Chilean army, and Colombia continued to employ Chilean military instructors. A national school of mines was opened at Medellin, and a faculty of natural sciences and agronomy created. An important programme of agricultural education and reform is planned by the Government, involving the founding of several new schools and the engaging of foreign experts.

Business conditions continued, on the whole, good, and a very noteworthy increase in imports from the United States occurred. The amount of salt produced in Colombia continues to increase. Mining development was satisfactory.

ECUADOR

The Revolution.—The year 1912 began with the revolution of ex-President Eloy Alfaro against President Estrada's Government. After having

been defeated with great slaughter at Huigra on Jan. 13, the revolutionary leaders were captured and Eloy, Flavio and Medardo Alfaro, as well as Ulpino Paez, were executed at Quito on Jan. 28 (see also III, *International Relations*). Another revolutionary outbreak occurred at Quito in favor of the Conservative party on the night of March 5, in which General Julio Andrade was killed. President Freile Zaldumbide then resigned and Francisco Andrade Marin assumed the executive power, which he continued to exercise until April 8, when General Leonidas Plaza Gutierrez was elected President. Plaza was not inaugurated, however, until September, when he formed the following Cabinet: Dr. Alfredo Baquerizo Moreno, Minister of Foreign Affairs; Luis F. Dillon, Public Instruction; Juan F. Game, Finance; Juan Francisco Navarro continued as Minister of War.

In December Colonel William C. Gorgas and a staff of expert assistants, at the request of the Ecuadorian Government, began preliminary surveys and estimates for the sanitation of Guayaquil.

The railway from Santa Ana to Manta was completed, and a bill was introduced into Congress providing for the establishment of agricultural schools. Quito, the capital, now has 100,000 inhabitants.

Business made little progress, owing to the revolution, and consequent total disruption of trade. During the latter part of the year, however, the imminent opening of the Panama Canal caused a slight revival of business at Guayaquil and other coast towns.

PARAGUAY

President Eduardo Schaerer was inaugurated on May 24, 1912; his Cabinet is made up of the following members: Dr. Eusebio Ayala, Secretary of Foreign Relations; José P. Montero, Secretary of the Interior; Dr. Geronimo Zubigaretta, Secretary of the Treasury; Dr. Felix Paiva, Secretary of Justice, Worship and Public Instruction; Sr. Manuel Gondra, Secretary of War and Marine. This new Government proposed to

send a large number of the young Paraguayans to the United States and Europe to study. The telegraph line between Asuncion and Rio de Janeiro, *via* San Carlos in the State of Matto Grosso, was opened in 1912. Asuncion, the capital, is to be provided with a complete water supply and sewerage system.

Cattle raising on a large scale by United States capitalists has been undertaken. Business conditions were much improved in 1912. Foreign trade was greater than ever before, and an increased sense of commercial stability and progress was evident throughout the Republic.

PERU

Administration.—Guillermo Billinghurst succeeded Augusto B. Leguia as President of Peru on Sept. 24, 1912, choosing his Cabinet as follows: Minister of Government, Dr. Elias Malpartida; of Foreign Affairs, Dr. Wenceslao Valera; Justice, Worship and Instruction, Francisco Moreyra y Riglos; War and Marine, General Enrique Varela; Finance and Commerce, Baldomero Maldonado; Public Works, Fermin Malaga Santolalla. This is regarded as one of the strongest cabinets Peru has ever had. Dr. Malpartida, however, resigned Dec. 25, following a vote of censure in the Senate. He was succeeded by General Enrique Varela. President Billinghurst showed himself keenly alive to the national problems of importance in his inaugural address, and less than two months after his inauguration succeeded in reaching an agreement with Chile which bids fair to solve the troublesome Tacna-Arica question, pending since 1883. It is announced that diplomatic relations between Peru and Chile will soon be renewed and this, probably the most deep-seated international difference in South America, seems to be practically settled.

The delimitation of the Peru-Bolivia boundary progressed satisfactorily and relations between the two Republics were materially improved by the visit of Federico Elguera as Peruvian representative to Bolivia. Two sanitary experts were engaged

from the United States to assist in the sanitation of Iquitos. Five Americans are employed on important educational work by the Peruvian Government, one being in charge of the Normal School in Lima and one rector of the University of Cuzco. Over \$40,000 was spent in additions to the University of San Marcos of Lima, the oldest American university, founded in 1551, where was held, July 21-28, the Third International Congress of American Students, in which 18 American Republics were represented, delegates attending from ten United States universities.

Important legal reforms were enacted in July, modernizing and simplifying many of the old codes. Agricultural and technical education made especial progress in Peru in 1912. Commercially, Peru was prosperous; the sugar and cotton crops were good; business conditions were favorable. Municipal improvements were effected in Lima and Callao, and a Peruvian graduate of Cornell was appointed to the new office of milk inspector of the nation.

URUGUAY

Several of the sociological reforms of President Battle y Ordonez were put into effect in 1912. The Government took over the Real Estate Mortgage Bank; and progress was made on the various plans for old-age pensions and government insurance, while it was obliged to abandon the municipal slaughter-house scheme after Messrs. Swift & Co., of Chicago, made large investments in Uruguay. An important law regarding the collection and publication of monetary statistics was enacted, and the "free markets" instituted in Montevideo continued to reduce the cost of living and furnish an interesting solution of that important question. Uruguay is now employing ten experts from the United States to assist in her development, among the latest engaged being Prof. Latham Clarke of Harvard University, to assist Dr. Zanetti, formerly of Columbia University, in inaugurating a comprehensive industrial chemical system, two dry-farming and two fisheries ex-

perts and a dairy and a poultry expert.

Business conditions continued good in 1912. The railway from Montevideo to Maldonado and Punta del Este, on the Atlantic coast, was opened, while the Pan-American Railway was purchased by the Uruguayan Government. Uruguay's total foreign trade showed great increases, her imports from the United States gaining more than those from any other country. The largest single shipment of lumber ever sent from a United States port went to Montevideo.

International shipping facilities with nearly all European countries, and with the United States, were much improved in 1912. Politically, the country was quiet, with every indication of constructive progress. The able men in President Battle's Cabinet are responsible for much of the continued increase in national strength and reputation, and for the useful application and development of the country's resources.

VENEZUELA

Visit of Secretary Knox.—A most important event in the political history of Venezuela in 1912 was the visit of Philander C. Knox, U. S. Secretary of State, from March 21 to 23. He was enthusiastically welcomed by the Venezuelan Government and people at Caracas and was heartily greeted wherever he went, both officially and popularly.

Administration.—On April 29, 1912, a new Cabinet was formed, C. Zume-ta being Minister of Interior; José Ladislao Andara, Foreign Relations; Manuel Porras Echenagucia, Finance;

General Ismael Pereira Alvarez, War and Marine; Pedro Emilio Coll, Interior; Rafael R. Alvarez, Public Works; General D. Arreaza Monagas, Public Instruction, and Dr. Ezequiel A. Vivas, Secretary General. President Gomez continued in power throughout the year, which was a tranquil one, though the return of ex-President Castro was threatened several times. The diplomatic service of Venezuela was reorganized by establishing six legations of the first class, into which all the present missions are merged.

Legislation.—The new sanitary law enacted in 1912 provides for the establishment of a sanitary office in Caracas, with branch offices at maritime and river ports and the principal interior towns of the Republic. The offices will be equipped with institutes of hygiene, and with bacteriological, parasitical and chemical laboratories. Legislation was also enacted specifying the manner of making railway contracts. Revisions of the mining code were considered.

Commerce and Industry.—The United States continues to be Venezuela's largest customer, and Venezuela continues to buy more from the United States than from any other country. While exports of cocoa in 1912 fell off on account of the drouth, no reduction took place in imports. Great improvements were made at the shipbuilding plant and repair docks at Puerto Cabello. A hydroelectric plant to supply current for Caracas and La Guayra was opened. The cotton mills at Valencia had a prosperous year. The population of Venezuela was 2,743,839. An automobile road was opened from Caracas to Maracay.

CANADA

ERNEST H. GODFREY

In Canada the year has been one of continued progress and prosperity. Immigration, trade, manufactures and the public revenue have each given record returns. Two questions of public controversy have been especially prominent: Canada's policy of naval defense and the effect of the *Ne Temere* Decree.

Naval Policy of Canada.—A Naval Service Department was established in 1910; two war vessels of 11,000 and 3,600 tons respectively were acquired from the British Government, and tenders were invited for the construction of four vessels of the improved *Bristol* class and six torpedo-boat destroyers of the improved *River*

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class. In October, 1911, these arrangements were abandoned, and after the close of the parliamentary session of 1911-12, Mr. Borden and certain of his colleagues proceeded to England to confer with the British Government and Admiralty upon the whole question of naval defense and the conditions confronting the British Empire. During his visit, which lasted from June 3 to Aug. 30, Mr. Borden addressed numerous public gatherings, at which he laid down the principle that the Dominions of the British Empire sharing in its defense must share also in the responsibility for and control of foreign policy, a principle which was accepted on all occasions in Great Britain and which received the endorsement of both the British Government and Opposition.

In October F. D. Monk resigned office as Minister of Public Works through disagreement with the naval policy proposed, and the following cabinet changes were consequently made on Oct. 29. To fill the vacancy caused by the resignation of Mr. Monk, Robert Rogers was appointed Minister of Public Works, his place as Minister of the Interior being filled by the transfer of W. J. Roche from the office of Secretary of State. Louis Coderre, M.P. for the Hochelaga Division of Montreal, was appointed to succeed Mr. Roche as Secretary of State; and at the by-election of Nov. 19, thus necessitated, he was reelected by a majority of 2,273 votes.

On Dec. 5, amid circumstances calculated to mark the historic character of the occasion, the premier introduced his bill to "authorize measures for increasing the naval forces of the Empire." Briefly stated, his proposals were for the appropriation of a sum not exceeding \$35,000,000 to be devoted to the immediate construction and equipment in the United Kingdom of three battleships or armored cruisers of the most modern and powerful type. When completed, these ships, which are to bear historic Canadian names, will be placed at the King's disposal for the common defense of the Empire, and will be maintained and controlled as part of the Royal Navy,

subject to their recall to Canada upon reasonable notice should the Dominion in future desire to establish a Canadian unit of the British navy. By their construction in the United Kingdom instead of Canada it is estimated that not only will the ships be completed at an earlier date but also a saving in cost of about \$12,000,000 will be effected. With a view, however, to develop Canadian shipbuilding the British Admiralty will give orders for the construction in Canada of small cruisers, oil tank vessels and auxiliary craft of various kinds. Canadians will have opportunities of serving as officers in the new warships.

In the course of his speech Mr. Borden submitted a memorandum of the British Admiralty, despatched on Oct. 25. Its concluding paragraph may be quoted, as upon it the action of the Canadian Government is largely based:

The Prime Minister of the Dominion having inquired in what form any immediate aid that Canada might give would be most effective, we have no hesitation in answering after a prolonged consideration of all the circumstances that it is desirable that such aid should include the provision of a certain number of the largest and strongest ships of war which science can build or money supply.

Associated with the proposals of the Dominion Government is an arrangement for the representation of Canada upon the British Committee of Imperial Defense. The premier announced that the British Government, pending a final solution of the question of the voice and influence of the overseas dominions, would welcome the presence in London of a Canadian Minister during the whole or a portion of each year, such Minister to be regularly summoned to the meetings of the Committee and to be consulted with upon important steps in foreign policy.

To the resolution embodying the principle of the Government bill, Sir Wilfrid Laurier, leader of the Opposition, moved on Dec. 12 an amendment which was still under discussion when on Dec. 18 the House of Commons adjourned until Jan. 14, 1913. Sir Wilfrid's amendment set

forth in part, (a) that Canada without further delay should enter actively upon a permanent policy of naval defense; (b) that aid to imperial naval defense should employ a permanent policy of participation by ships owned, manned and maintained by Canada and contemplating construction as soon as possible in Canada; (c) that the addition under the Naval Service Act, 1910, of two fleet units to be stationed on the Atlantic and Pacific coasts of Canada, respectively, rather than by a contribution of money or ships, is the policy best calculated to afford relief to the United Kingdom in respect to the burden of imperial naval defense.

Ne Temere Decree.—Promulgated by the Church of Rome on Aug. 2, 1907, this decree came into operation on April 19, 1908. It declared invalid in the eyes of that Church marriages between Roman Catholics and persons of other denominations, unless such marriages were performed by a priest of the Roman Church and under special dispensation. In a country like Canada, where mixed marriages are not infrequent, such a decree could not fail to arouse controversy, and it has in fact evoked the liveliest discussion during the past two years. In 1912, legal questions bearing upon the effect of the decree have been settled by the highest authority. On Jan. 21, 1912, Justice Charbonneau, at Montreal, ruled in favor of the legality of the marriage contract in the Hébert case, wherein, under the decree, a marriage affecting the legitimacy of offspring had been declared invalid by Archbishop Bruchesi on Nov. 12, 1909. In the Dominion parliamentary session of 1911-12, E. A. Lancaster introduced a private member's bill to provide for the validity throughout Canada of all marriages duly performed "notwithstanding any differences in the religious faith of the persons so married and without regard to the religion of the person performing the ceremony." Doubts having been raised as to the legal power of the Dominion Parliament under the British North America Act, 1867, which granted Confederation, to enact such a bill, the Dominion Government undertook to

refer the question to the Supreme Court of Canada under Section 60 of the Supreme Court Act, and accordingly a case was prepared in which three questions were put, the first two being in the following form:

1. (a) Has the Parliament of Canada authority to enact in whole or in part Bill No. 3 of the first session of the Twelfth Parliament of Canada entitled "An act to amend the Marriage Act"?

(b) If the provisions of the said Bill are not all within the authority of the Parliament of Canada to enact, which, if any, of the provisions are within such authority?

2. Does the law of the province of Quebec render null and void, unless contracted before a Roman Catholic priest, a marriage which would otherwise be legally binding which takes place in such province (a) between persons who are both Roman Catholics or (b) between persons one of whom, only, is a Roman Catholic?

The Supreme Court gave its decision on June 17, 1912, when to both questions a majority of the five justices present returned a negative answer. The Government then appealed to the Judicial Committee of the Imperial Privy Council. Judgment was delivered by the Lord Chancellor on July 29, 1912, and its effect was to uphold the decision of the majority of the Supreme Court of Canada. Hence the definitive decision is that questions affecting the validity of marriage are exclusively under the control of the provincial legislature. (See also XXXI, *Religion*.)

Extension of Provincial Boundaries.—Long-standing controversies between the Dominion and certain of the provincial governments have been settled by the Manitoba, Ontario and Quebec Boundary Extension Acts, 1912. Under these acts the boundaries of Manitoba have been extended northwards to the 60th parallel of north latitude between the eastern boundary of Saskatchewan and the western shore of Hudson Bay; also, from the point where the northern boundaries of Manitoba and Ontario formerly coincided the boundary of Manitoba has been extended due north to a point defined and thence northeasterly to the point where the

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89th meridian of west longitude intersects the southern shore of Hudson Bay. The northern boundaries of Ontario have been extended to the southern shores of Hudson Bay, the new western boundary of Ontario coinciding with the new eastern boundary of Manitoba. To the province of Quebec have been added the whole of the territory of Ungava and that part of Labrador which is within the Dominion of Canada. The following statement shows the total area of the Dominion and the new distribution into provinces and territories:

PROVINCES	Land Area, sq. miles	Total Area, sq. miles
Alberta.....	252,925	255,285
British Columbia.....	353,416	355,855
Manitoba.....	231,926	251,832
New Brunswick.....	27,911	27,985
Nova Scotia.....	21,068	21,428
Ontario.....	365,880	407,262
Prince Edward Island...	2,184	2,184
Quebec.....	690,865	706,834
Saskatchewan.....	243,382	251,700
N. W. Territories.....	1,207,926	1,242,224
Yukon.....	206,427	207,076
Total.....	3,603,910	3,729,665

By this revision of boundaries Manitoba receives about 178,100, Ontario 146,400, and Quebec 355,000 square miles of additional territory. Quebec instead of British Columbia thus becomes the largest province of the Dominion, Ontario being second and British Columbia third in point of size.

Railways.—According to the official railway statistics of the Department of Railways and Canals for the year ended June 30, 1912, the total railway mileage of the Dominion (not including 8,800 miles under construction) was 26,727, an increase of 1,330 miles over the previous year. During the same period \$60,248,325 was added to the capital liability of the railways, bringing the total up to \$1,588,937,526, of which \$770,459,351 was represented by stocks and \$818,478,175 by bonds. The Canadian Pacific and other leading lines have made further progress in construction and development. Up to Oct. 31, 1912, the eastern division of the new National Transcontinental Railway had a total of 1,656 miles

of main-line track laid between the two termini of Moncton, N. B., and Winnipeg, Man., 300 miles having been laid during the past season. On the western division, which is now in the course of construction by the Grand Trunk Pacific Railway, the line has been completed along the main track from Winnipeg to Prince Rupert, B. C., via Edmonton and the Yellowhead Pass, as far as Tête Jaune Cache, B. C., a distance of 1,100 miles. From Prince Rupert, along the Skeena River Valley, construction has advanced to Hazelton, a distance of 180 miles. This leaves about 465 miles of line still to be completed in British Columbia. On the Canadian Northern Railway system the total mileage of Canadian Northern Railway lines at present in operation is 4,317, and the total mileage operated by the system is approximately 6,600. The mileage added during 1912 amounts to 983, much of it being for the purposes of the trans-continental line from Quebec to Vancouver and Port Mann. In connection with the government project for an additional grain outlet via Hudson Bay, a contract for the construction of the railway from The Pas, Manitoba, to the shores of Hudson Bay has been awarded during the year.

Population and Immigration.—The finally revised returns from the census of 1911 give the total population of Canada as 7,204,838, distributed by provinces as follows: Prince Edward Island 93,728, Nova Scotia 492,338, New Brunswick 351,889, Quebec 2,002,712, Ontario 2,523,274, Manitoba 455,614, Saskatchewan 492,432, Alberta 374,633, British Columbia 392,480, Yukon 8,512 and Northwest Territories 17,196. The decennial rate of increase as between 1901 and 1911, 34.13 per cent., is the largest in the world and is caused by the heavy tide of immigration which set in with the beginning of the century. During 1912 the influx of immigrants has continued unchecked. For the year ended March 31, 1912, the total number of immigrants was 354,237, a further record. Of the total, 138,121 were from the United Kingdom, 133,710 from the United States and 82,406 from other

countries. The figures for the first 11 months of the calendar year 1912 are even more remarkable, for the total to Nov. 30 was 382,779, of whom 142,797 came from the United Kingdom, 134,380 from the United States and 105,602 from other countries.

Agriculture.—An act was passed in the last session (ch. 3) to provide for the granting of subsidies to the provincial governments for the encouragement of agriculture; and for the fiscal year ending March 31, 1913, a total sum of \$500,000 has been appropriated for this purpose.

The season of 1912 proved to be one of the coldest and wettest on record, persistent rains prevailing over the greater part of Canada through the harvesting period, resulting in great damage to grain crops. According to the latest official estimates the areas and yields of the principal field crops in 1912 were as follows:

CROP	Area, acres	Yield, bushels ¹
Fall wheat.....	781,000	16,868,700
Spring wheat.....	8,977,400	188,816,600
All wheat.....	9,758,400	205,685,300
Rye.....	148,700	3,086,000
Barley.....	1,415,200	43,895,100
Oats.....	9,216,900	381,502,000
Flaxseed.....	1,677,800	21,143,400
Corn for husking.....	292,850	14,218,400

¹ Bushels of weight: 60 lb. wheat; 56 lb. rye, flaxseed and corn; 48 lb. barley; 34 lb. oats.

Industry and Commerce.—Very striking is the industrial progress of Canada as revealed by the census of manufactures taken in 1911. The results, published in 1912, show that in 1910 a total of 19,218 establishments having a capital of \$1,247,583,609 paid in salaries and wages to 515,203 employees \$241,008,416, and that the total value of their products was \$1,165,975,639. For the first time the value both of capital and products exceeds one billion dollars, and the increases compared with the previous decennial census of 1900 show percentages for capital of 178.74, for salaries and wages of 204.17 and for products of 216.26. The value of products at the postal census of 1905 was \$718,352,603; so that the last five years shows an in-

crease in this item of over 61 per cent. The movement for the further extension of trading relations between the component nations of the British Empire continues active. An agreement between the Dominion and nine of the British West Indian colonies for preferential tariffs was signed at Ottawa on April 9, 1912, and George E. Foster, Minister of Trade and Commerce, visited England during the summer recess as member of the Royal Commission which was appointed on the motion of Sir Wilfrid Laurier at the Imperial Conference of 1911 to investigate and report upon the natural resources of the British Empire and the development of mutual trading relations (see *The United Kingdom, infra*). The value of Canadian trade with foreign countries for the fiscal year ended March 31, 1912, reached the record total of \$874,637,794, inclusive of coin and bullion. Imports amounted in value to \$559,320,544 and exports to \$315,317,250. The value of imports from the United Kingdom was \$117,192,431, from the United States \$368,145,107 and from other countries \$73,983,006. Exports to the United Kingdom were valued at \$151,853,413, to the United States at \$120,534,634 and to other countries at \$42,929,203.

Public Revenue.—For the year ended March 31, 1912, the public revenue reached the total of \$136,108,217, again the highest on record in Canada. The expenditure was \$98,161,441, leaving a surplus of \$37,946,776.

Legislation.—The first session of the Twelfth Parliament of Canada, held at Ottawa from Nov. 15, 1911, to April 1, 1912, resulted in the passing of 170 acts. Of these 113 were of local and private character, relating for the most part to railway, industrial and insurance concerns and to divorces of marriage. The 57 public general acts comprised less than the usual amount of original legislation, those of cardinal importance relating only to three or four subjects, namely, the granting of subsidies to the provincial governments for the encouragement of agriculture (ch. 3); the extension of provincial boundaries: Manitoba (ch.

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32), Ontario (ch. 40) and Quebec (ch. 45); and the sale of grain (ch. 27). Government bills intended to provide for the improvement of public highways and for the creation of a Tariff Commission passed the House of Commons, but failed of enactment through action of the Senate. The Biological Board Act (ch. 6) created a Biological Board (at present constituted of eight members under the chairmanship of Prof. E. E. Prince) to have charge of all biological stations in Canada and of investigations connected with marine and fresh-water fisheries, flora and fauna. By Chapter 45 an additional annual subsidy of \$100,000 was granted to the province of Prince Edward Island. The Grain Act (ch. 27) deals with the inspection, grading, sale and transportation of grain. Many of its provisions are in amendment of existing laws; but new features in the act are the establishment of a board of three grain commissioners and with powers for the expropriation, construction or leasing of terminal elevators to be managed by the commission. The second session of the Twelfth Parliament of Canada opened on Nov. 21, 1912.

EUROPE, ASIA, AND AFRICA

FRANCIS G. WICKWARE

THE BRITISH EMPIRE

THE UNITED KINGDOM

Cabinet Changes.—In February several important changes in the Cabinet were announced. Earl Spencer, Lord Chamberlain since 1905, was succeeded by Lord Sandhurst. The Marquess of Crewe succeeded Earl Carrington as Lord Privy Seal, and Thomas McKinnon Wood entered the cabinet as Secretary for Scotland, succeeding Lord Pentland. In June Earl Loreburn resigned the office of Lord High Chancellor and was succeeded by Viscount Haldane, Secretary for War, whose place at the War Office was filled by Col. J. E. B. Seely, Lord Haldane's under-secretary. At the same time the Attorney-General, Sir Rufus Isaacs, was admitted to the Cabinet.

Home Rule for Ireland.—The most important item of the legislative programme announced at the opening of Parliament on Feb. 14 was reached April 11, when Premier Asquith paid the debt of the Liberal party to the Irish Nationalists by formally asking leave to introduce a bill for the better government of Ireland. As outlined by the Premier, the bill provided for the establishment of an Irish Parliament, consisting of a Senate of 40 members nominated by the Imperial Executive, to hold office for eight years and to retire by rotation, their places to be filled by the

Irish Executive; and a House of Commons of 164 members, elected by the existing Irish constituencies, from Ulster 59, Leinster 41, Munster 37, Connaught 25 and the universities two. Over the proceedings of this Parliament a triple control was reserved in the veto of the Lord Lieutenant, the right of appeal to the Privy Council on all questions as to the validity of laws passed by the Irish Parliament, and, finally, the over-riding force of Imperial legislation. Special provisions were made for the protection and preservation of religious equality.

The payment of all Irish services except certain reserved services was imposed on the Irish Parliament; funds for this purpose were provided in the postal revenues and in a sum to be transferred annually from the Imperial to the Irish Exchequer representing the cost of the Irish services, exclusive of the Post Office, at the time of the passing of the Act. To set up the new government, a gift of £500,000 a year, to be reduced eventually to £200,000, was to be made by the Imperial Exchequer. Irish revenue fails to meet Irish expenditure by about £1,500,000 per year, but provision was made for a readjustment of financial relations when Ireland should become self-supporting. Finally, the bill provided for the reduction of Irish representa-

tion in the Imperial House of Commons from 103 to 42.

The bill was introduced on April 16, and passed its first reading by a vote of 360 to 266. On the 23rd, the bill was accepted by an Irish Nationalist Convention carefully organized to avoid any expression of discontent with the compromises to which the Nationalist representation in Parliament had been obliged to agree. The bill passed its second reading May 9, by a vote of 372 to 271, and reached the committee stage June 11. Here it was attacked clause by clause but without important amendment up to the adjournment of Parliament on Aug. 7.

Before the reform of the House of Lords had cleared the way for a Home Rule measure, organized opposition to the Government's plan had developed in Ulster, and demonstrations of protest were frequent throughout the year. In September a series of remarkable demonstrations began at Enniskillen on the 18th, and culminated on Ulster Day, Sept. 28, in the signing by thousands of Orangemen at Belfast of a solemn covenant to use every means which might be found necessary to prevent the establishment of an Irish Parliament, and in case it should be set up to refuse to recognize its authority. This covenant was signed by 218,206 men in Ulster alone, and by 19,162 in other places.

Parliament reassembled on Oct. 7, and consideration of the bill was resumed Oct. 15. On the 31st a Government amendment was adopted providing for the replacement of the nominated Senate, after a period of five years, by an Upper House elected by provinces in such a manner as to secure the representation of minorities. A proposal to extend the principle of proportional representation to the House of Commons was rejected on Nov. 4, and an amendment offered next day to admit women to the franchise met the same fate. On Nov. 11 the Government was defeated by a vote of 227 to 206 on a division on an amendment to the financial clauses of the bill, but the defeat served only to delay the proceedings. The Government decided not to resign, pleading the difficulties

of the international situation, and on the 18th secured the rejection of the amended clause and introduced a substitute resolution which was carried next day. The committee stage of the bill was concluded Dec. 12.

The Franchise Bill.—The present registration system for electing Members of Parliament is based upon 11 different qualifications, with at least 19 variations in the three kingdoms. A comprehensive Franchise and Registration bill, designed to sweep away most of these intricacies, and to abolish plural voting, was introduced June 17. If the bill is enacted into law, about 525,000 plural votes and 49,000 university votes, it is estimated, will be removed from the register, while about 2,500,000 new voters will be added to the lists.

Disestablishment of the Welsh Church.—A bill to disestablish and partially disendow the Church of England in Wales, was introduced in the House of Commons April 23. Of the revenue from endowment of £260,000 a year, at least £87,000 is to be retained permanently. Most of the rest of the endowment will be returned eventually to the counties for charitable and public purposes.

Finance.—Revenue totalled £185,090,000 during the year ended March 31, 1912, and the surplus of £6,545,000 was the largest on record. Lloyd-George's third budget, presented April 2, estimated the revenue for 1912-13 at £187,189,000, and expenditure at £186,885,000. Of the revenue £153,795,000 was from taxation, which the budget neither increased nor reduced. Of the expenditure, £27,860,000 was for the army, and £44,085,400 for the navy. The latter figure was contingent on no increase in German naval armament, and to provide against the possibility of an increased shipbuilding programme, the 1911-12 surplus, instead of going to the sinking fund, was set aside as a reserve. Of this fund £990,000 was later appropriated for naval expenditure, £500,000 for a loan to Uganda, and the remainder was applied to the reduction of debt.

Naval Programme.—The naval estimates for 1912-13 were introduced by Winston Churchill March 18. They called for an expenditure of

£44,085,400, a decrease of £307,100 from the amount spent in the preceding year; this sum was intended to provide four battleships, eight armored cruisers, 20 destroyers, a number of subsidiary craft, and an increase of 2,000 in personnel. Mr. Churchill made it clear that any increase or reduction in the German programme of two Dreadnoughts a year would be promptly met by Great Britain. After the extension of the German programme (see *Germany, infra*), accordingly, supplementary estimates were introduced for additional expenditure of £990,000 during the current year, and the British programme was increased to five battleships in 1913 and four in each of the following years. (See also III, *England and Germany*.)

Commerce.—In spite of disorganization by severe labor disturbances and international crises, the foreign trade of the United Kingdom reached in 1911 the record value of £1,237,562,434. Imports increased only 0.3 per cent. to £680,559,175, but British exports advanced 5.5 per cent. to £454,282,460, while re-exports of colonial and foreign products declined 1 per cent. to £102,720,799. Another record is assured for 1912. During the first 11 months imports were valued at £670,883,764 and exports at £445,974,964.

The Royal Commission on Divorce and Matrimonial Causes, after three years of inquiry, presented its report on Nov. 11. Nine members of the Commission agree in recommending far-reaching changes in divorce law and procedure, the most important of which are opposed by the remaining three members, who accordingly presented a minority report. The Commission recommend unanimously that, as regards the ground for divorce, the two sexes should be on an absolute equality. They are unanimous also in recommending that power should be given to declare marriages null in cases of unsound mind, epilepsy and recurrent insanity, venereal disease, pregnancy of the woman for which the husband is not responsible, and wilful refusal to consummate the marriage. Both majority and minority reports agree that the publication of re-

ports of divorce cases should be restricted, and prohibited entirely during the trials, and that for the benefit of the poorer classes there should be local divorce courts, though the minority oppose the number recommended by the majority. The minority oppose any extension of the grounds for divorce, which is now granted solely for adultery, and in this they are most widely at variance with the majority, who recommend the amendment of the divorce law to include five additional grounds: desertion for three years and upward; cruelty; incurable insanity, after five years' confinement; habitual drunkenness found incurable after three years from first order of separation; and imprisonment under commuted death sentence.

Imperial Wireless Scheme.—A contract with the Marconi Wireless Telegraph Company for the erection of wireless stations in the Imperial System announced at the Imperial Conference of 1911, was signed July 19. Five stations are immediately contemplated, in England (London), Cyprus, Aden, South Africa (Pretoria), and India (Bangalore). These and all subsequent stations are to have a range of at least 2,000 miles and are to be erected on specifications approved by the Postmaster-General. Buildings are to be erected by the company at cost, and all equipment is to be supplied for £60,000 per station. At the end of six months' satisfactory working, the company is to hand over the stations to be operated by the Governments concerned. The agreement is for 28 years from the completion of the first five stations, though it may be terminated after 18 years, and during its continuance the Marconi Company is to receive a royalty of 10 per cent. of the gross receipts of the stations.

Imperial Trade Commission.—In pursuance of a resolution of the Imperial Conference of 1911, a representative commission to inquire into the natural resources and improvement of trade of the Empire was appointed early in April. The chairman is Sir Edgar Vincent, who succeeded Arthur Morley in December, the first chairman, Lord Inchcape, having withdrawn shortly after his

appointment. The commission began its sittings in London June 13 and after the completion of its investigations in the United Kingdom will proceed to Australia.

National Insurance.—The opposition of a large section of the medical profession to certain features of the National Insurance Act of 1911 was organized Jan. 9 by the formation of a special Reform Committee of the British Medical Association. The doctors' demands embraced "six cardinal points," the chief of which were for the establishment of a minimum income limit of £2 a week for those entitled to medical benefit, and for the increase of the 6s. per head of population insured provided for medical services under the Act to 8s. 6d., exclusive of the cost of drugs, with additional fees in surgical cases. Early in May the Association requested of its members a pledge not to work the Act until the demands of the doctors were granted. When the Act went into force on July 15 over 20,000 pledges had been received.

The British Medical Association, accordingly, on July 23 definitely broke off negotiations with the Government and called upon its members to withdraw from advisory insurance committees and to refuse medical service under the Act. On Oct. 23 the Government made a new offer to the medical profession, increasing the original 6s. to a total of 9s., of which the doctors would get 7s. 6d. and 1s. 6d. would be allowed for drugs. The annual cost of the new concession was estimated at £1,650,000. The British Medical Association, in representative meeting on Nov. 19, rejected the new terms by an overwhelming majority. In December the Association submitted the question of accepting service under the revised terms to a vote of the members. The result was again an overwhelming majority against service. The association on Dec. 21 again decided to continue the fight on the Act, but later in the month physicians began to desert in large numbers. It was announced at the end of the year that so many physicians had accepted the Government's terms that the success of the medical benefit was assured.

Nationalization of Telephones.—

The nationalization of the entire telephone system of the country was completed Jan. 1, when the plant and staff of the National Telephone Company, a corporation operating about 1,500 local exchanges, was taken over by the Post Office. The company's total claim was £20,925,000.

The Coal Strike.—In October, 1911, the coal miners of Great Britain, by a drastic revision of rules, conferred upon the Miners' Federation the power to declare a national strike for aggressive as well as for defensive purposes, with the approval of a two-thirds majority on a special strike ballot. Within six months the Federation had exercised its new power to cause a complete suspension of coal mining in Great Britain for the establishment of the principle of the minimum wage.

Balloting began Jan. 10 on the question, "Are you in favor of giving notice to establish the principle of an individual minimum wage for every man and boy working underground in every district in Great Britain?" The result was announced at the conference of the Miners' Federation which opened at Birmingham Jan. 18; of the 561,522 ballot papers returned, 445,801, nearly four-fifths, voted in favor of giving notice. The Federation accordingly authorized the issuing of notices in all districts for the suspension of work on Feb. 29, without prejudice to either local or national negotiations. The minimum rates for pieceworkers other than colliers, underground workers at day rates, and boys, the Federation left for settlement to the different districts. For pieceworkers at the face of the coal, the Federation formulated a scale of minima varying between 4s. 11d. for Somersetshire to 7s. 6d. for Yorkshire and South Wales. In an effort to avert a general strike the Government on Feb. 27 urged the operators to accept the principle of the minimum wage, with adequate safeguards against abuse, and offered to act as mediator in conferences for the establishment of minimum rates in the different districts. The operators of practically the whole of England and North Wales, representing about 60 per

cent. of the coal trade, accepted these proposals; they were rejected, however, by the operators of Scotland, South Wales, and smaller areas, and as the miners insisted on the acceptance of the minimum wage in every district as a preliminary to any further negotiations, work was suspended throughout the coal mines of Great Britain on Feb. 29.

The strike immediately affected about 850,000 underground workers and some 200,000 surface workers. The scarcity of fuel at once disorganized the iron, glass, transport and other industries and by the end of the second week of the strike nearly half a million workers in other trades had been thrown out of employment. Shipping was practically at a standstill and food prices had begun to advance, when the Government succeeded on March 12 in again bringing together representatives of the operators and miners. The conferences, however, were without result, and on the 15th Premier Asquith announced the immediate introduction of legislation for the establishment of the principle of the individual minimum wage in the coal-mining industry.

The Minimum Wage Bill was introduced by the Premier on March 19. It followed closely the lines of the compromise suggested by the Government late in February. The principle of the minimum wage was clearly stated but no attempt was made to establish statutory minima. The rates were left to the determination of district boards in each of 21 districts, composed of representatives of employers and employed, with an independent chairman chosen by agreement or by the Board of Trade. To the district boards was left also the establishment of rules to safeguard the operators against malingering. Aged and infirm workers were exempted from the working of the Act and also those failing to comply with the district rules, the decision in these matters lying with the district boards. No penalties were provided either against miners refusing the awards of the boards or against operators refusing to pay the established minima. The experimental nature of the legislation was rec-

ognized by limiting the operation of the act to three years.

The bill received the Royal assent on March 29. Coal operators generally were ready to give effect to its provisions. The Miners' Federation, however, although they had obtained legislative enactment of the principle for which they had struck, refused to declare the strike at an end without a mandate from the miners. A ballot was accordingly taken on the question of returning to work, pending a settlement of minimum rates by district boards. Of the 445,024 members voting, 244,011, a majority of 42,998, voted to continue the strike. The executive committee of the Federation, however, in submitting the decision to a national conference of delegates, recommended in favor of a resumption of work. Their advice was accepted, and on April 6 the strike was declared at an end.

The first award under the Minimum Wage Act was made in South Wales early in May; it set aside the miners' demand for a rate of 5s. for adult laborers and established an average rate of 4s. 6d., an issue which the miners received with marked dissatisfaction. In other districts in very few cases were the miners able to secure either the rates scheduled for coal getters before the strike or the minimum of 5s. demanded for all adult laborers underground; the rates fixed as minima, however, are higher than the actual average rates previously earned by a considerable proportion of the lower grades of miners, and add about \$10,000,000 per year to the wages bill of the industry.

The London Dock Strike.—The 6,000 lightermen employed in the port of London struck May 20 in support of the employees of one lighterage company who had struck the previous week to force the dismissal of a non-union watchman. On the same day the Transport Workers' Federation ordered its members not to assist, during the dispute, in forwarding by land goods usually carried by water. The trouble spread to all classes of transport workers with extraordinary rapidity, and a general strike was declared on the 23rd. The strike notice affected 100,000

men, and suspended the unloading of a large number of ships, many of them carrying perishable food products, with a total tonnage in excess of 1,000,000 tons. In defense of the principle of the open shop the employers refused to meet the men in a conference arranged by the Board of Trade, and early in June they rejected the Government's proposal of a joint conciliation board composed of representatives of the employers and employees. Meanwhile the Government had taken effective measures to guarantee the food supply of London. When the employers rejected the Government's conciliation scheme, the Transport Workers' Federation resorted to their final weapon, the national strike. The call was issued June 10 and affected about 300,000 men employed in the ports of the United Kingdom. It was obeyed, however, by not more than 20,000 men, and the majority of these returned to work within a week. The strike leaders thereupon made direct application to the employers for a conference. It was not granted until the middle of July, and by this time the men's demands were limited to the reinstatement of the strikers. The employers represented by Lord Devonport, however, would assent to no conditions precedent to a resumption of work, and on the 27th the leaders ordered unconditionally a resumption of work.

The Census.—Detailed figures of the census returns of 1911 for England and Wales appeared in July. The total population was 36,070,492, of whom 17,445,608 were males and 18,624,884 females. The increase since 1901 was 3,542,649, 10.89 per cent., the lowest rate of increase recorded since the first census in 1801.

THE COLONIES

Australia.—The programme of the Labor party announced at the opening of Parliament on June 19 included a navigation act, the opening of leasehold areas in the Northern Territory rent free for ten years, the establishment of a £5 maternity allowance for mothers, and the provision of £4,000,000 to £5,000,000 for defense. The principal feature of

the Speech from the Throne was the announcement of the Government's intention to amend the constitution to permit effective legislation with regard to corporations, trusts and monopolies connected with trade, manufactures or production. A monopolies bill along the lines of that rejected by the people in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 133) was passed by the House in December.

Revenue during the year ended June 30, 1912, totalled £20,546,361, compared with £18,806,237 in 1910-11; the expenditures of the two years totalled, respectively, £14,297,572 and £11,321,354. The budget for 1912-13, introduced Aug. 1, estimated total revenue at £20,422,000, and net revenue at £14,343,250, while expenditure is expected to rise to £16,604,791, leaving a deficit of £2,261,541. Defense represents nearly one-third of the expenditure, £5,438,364.

Imports of merchandise in 1911 had a total value of £64,997,907, as against £58,682,391 in 1910; the corresponding figures for exports were £67,425,172 and £69,855,873, respectively. Imports from the United States increased from £7,659,150 in 1910 to £9,007,657 in 1911, while exports to the United States declined by about £130,000.

The census of April 3, 1911, showed a population of 4,455,005, of whom 2,313,035 were males, an increase of 681,204 in ten years. New South Wales increased 293,602 to 1,648,448; Victoria 114,481 to 1,313,551; Queensland 107,684 to 605,813; South Australia 50,212 to 208,558; Western Australia 97,990 to 282,114; Tasmania 18,736 to 191,211; while the Northern Territory decreased 1,501 to 3,310.

Egypt.—Lord Kitchener's first report, covering the year 1911, described conditions of continued prosperity. The revenue rose to £E16,793,000 and provided a surplus of nearly £E2,000,000. The budget for 1912 estimated revenue at £15,900,000, and expenditure at £15,400,000, an increase of about £300,000 over 1911. Education is receiving considerable attention, while agriculture is being encouraged by all possible

means. Of the Soudan the report speaks with the greatest enthusiasm. A comprehensive irrigation scheme has been planned which will open up a vast field for development. The population now exceeds 3,000,000, and Lord Kitchener expects it to double in the next five years.

India.—The celebrations connected with the visit of King George and Queen Mary, on which the total expenditure was £787,000, ended at Calcutta Jan. 8. On the 10th the Royal party sailed from Bombay, landing in England Feb. 4. Summing up the results of the Emperor's visit, the *London Times* said that it had strengthened the ties which bind India to the Crown, deepened the sense of loyalty, gratified the princes, and tended to pacify conflicting interests. An attempt on the life of Viscount Hardinge, on the occasion of the State entry into Delhi on Dec. 23, shows, however, that a certain class of natives are still in a condition of unrest.

The financial statement for the year 1911-12 showed revenue of £81,447,900 and expenditure of £78,697,900. The surplus of £2,750,000 exceeded that of the budget estimate by nearly two millions sterling. The estimates for 1912-13 show a surplus of £1,511,600; revenue and expenditure are on about the same scale as in 1911-12. An interesting item in the estimates of expenditure is £1,333,300 for initial outlay on the new capital at Delhi.

New Zealand.—In the general election of Dec., 1911, the Ward Government suffered severe losses; the new Parliament contained 39 Conservatives, 33 Liberals, 4 Labor members, and 4 Independents. The prohibition measure submitted to the voters at the same election was defeated by a small margin; the vote was 259,943 for to 205,661 against, a 60 per cent. majority being required to enact; the vote for the continuance of local option was 237,025, against 234,656 for no-license.

Parliament was opened on Feb. 16. On the 27th only the casting vote of the Speaker saved the Government from defeat on a vote of want of confidence. Sir Joseph Ward was able to carry a motion proroguing

Parliament and immediately retired from the leadership of the party. He was succeeded by his Minister of Industries, Commerce and Agriculture, Thomas Mackenzie, who completed an entirely new cabinet March 28. Parliament reassembled July 1, and on the 6th, the Government was twice defeated, on a want of confidence resolution by a vote of 41 to 33. The Mackenzie cabinet thereupon resigned and a new ministry was formed by Mr. Massey, leader of the opposition, on July 10. The new government announced its programme on Aug. 6. It proposed an elective Legislative Council, each island to form one constituency returning 20 members under a system of proportional representation; a bill to regulate the finances of municipalities; the regulation of all public services except railways by a single independent commissioner; an increased graduated tax on large estates and a reduction of the tax on small estates; and the lowering of the pension age for women to 60 years.

South Africa.—The Parliament which closed June 25, after a five months' session enacted a Miners' Phthisis Act, a Defense Act, a Land Settlement Act, and other legislation dealing with agricultural credit, irrigation, the civil service, and railways. The Miners' Phthisis Act created a Government insurance fund and provided for an annual levy of £70,000 on mine owners for the benefit of afflicted miners. The most important piece of legislation was the Defense Act. Its fundamental principles were the liability of every citizen to render in time of war personal service in defense of the Union in every part of South Africa; and the liability of every citizen to begin a course of military training not later than his twenty-first year and to complete it in the fourth year from the year of commencement. The period of training is 30 days for the first year and 21 days for the three following years. Payment during training is provided.

Early in April Sir Thomas Smartt succeeded Sir Starr Jameson as leader of the Unionist Opposition. Before his retirement Sir Starr

Jameson abandoned his policy of conciliation and led an attack on the Government's scheme of reorganization of the civil service. The Government has suffered from dissensions in the Cabinet. Differences between Mr. Sauer, Minister of Railways, and Mr. Hull, Minister of Finance, led to the resignation of the latter on May 18. The quarrel was aired in the House later in the month, and in June a Cabinet crisis was averted only by a rearrangement of portfolios. Late in the year the differences between the Premier and the anti-Imperialist General Hertzog became so acute that General Botha resigned on Dec. 15. He was at once invited to form a new Cabinet. The new ministry, announced Dec. 20, includes Mr. Sauer, Minister of Justice and Native Affairs; General Smuts, Minister of Finance and Defense; A. Fischer, Minister of the Interior; F. S. Malan, Minister of

Mines and Education; H. Burton, Minister of Railways and Harbors; Sir Thomas Watt, Minister of Posts and Telegraphs and Public Works; and Sir D. de Villiers Graaff.

The revenues for 1911-12 were sufficiently above the estimates to convert an anticipated deficit of £838,000 into a surplus of £446,000. The actual figures of revenue and expenditures were, respectively, £17,033,000, and £16,587,000. For 1912-13 the revenue was estimated at £16,112,000 and the expenditure at £16,782,343; the deficit of £670,343 it is proposed to meet by appropriating the £855,000 surplus of 1910-11.

Imports in 1911 totalled £38,382,258, and exports, £57,734,875; the corresponding figures for 1910 were £39,185,561 and £54,509,270. Of the exports, mineral products accounted for no less than £48,036,716; gold exports totalled £37,670,972, and diamonds, £8,282,879.

CONTINENTAL EUROPE

AUSTRIA-HUNGARY

The Foreign Ministry.—The death on Feb. 17 of Count Aehrenthal, Minister of Foreign Affairs of the Dual Monarchy since Oct. 24, 1906, removed from the field of European diplomacy one of the most striking personalities among modern statesmen. Count Aehrenthal's foreign policy was to raise Austria-Hungary to a position of equality with the other great Powers, and particularly with Germany, and to this end he cultivated the friendship of Italy to offset the preponderating influence of Germany in the Triple Alliance. The last few weeks of his life were embittered by the violent attacks of the pro-German Clericals on his alleged failure adequately to support Germany in the Morocco incident.

Count Leopold Berchtold, his successor, is the first Hungarian to hold the management of foreign affairs since 1879. In affirming his loyal adherence to the principles of Count Aehrenthal, Count Berchtold defined his foreign policy as the strengthening of allied ties, and the development of friendships, especially that of Russia, while steadily pursuing

legitimate interests and aims. His connection with the international events of the year are described on another page (see III, *International Relations*).

Finance.—The budget for the Dual Monarchy, as passed by the Delegations on May 4, provided for expenditures of \$78,685,000 for the army, \$14,935,000 for the navy, and altogether a total of \$98,104,165.

Armaments.—An army bill designed to raise the peace footing of the army from 290,000 to 350,000 was passed by the Austrian and Hungarian legislatures. The measure was responsible for a state of chaos in Hungarian politics throughout the year. The opposition demanded that the question of universal suffrage be given prior consideration and for several months successfully obstructed the army bill. Count Khuen Hedervary and his Cabinet resigned in April, and a new ministry was formed by Dr. de Lukacs. With the support of Count Tisza, elected to the presidency of the Chamber in May, Dr. de Lukacs forced the passage of the army bill on June 11 by expelling its opponents from the Chamber.

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Commerce.—Foreign-trade returns for 1911 show the imports to have been valued at \$641,576,200, and exports at \$483,772,800; the corresponding figures for 1910 were \$579,129,000 and \$490,977,000. Imports from the United States totalled about \$65,000,000; exports to the United States were valued at \$18,889,272, a decrease of \$1,388,489 from the figures for 1910.

BELGIUM

The elections of June 2 resulted, quite unexpectedly, in the return to power of the de Broqueville government, with the Clerical majority in the Chamber increased from six to 16. The chief issue was the maintenance of Church schools, which the Clericals wish to place on the same financial footing as the communal schools. The state of the parties is: Clericals, 101; Liberals, 45; Socialists, 38; Christian Democrats, 2.

At the opening of Parliament on Nov. 12, M. Schollaert was elected president of the Chamber by a vote of 167 to 89. The Premier gave up the portfolio of railways for that of war. A new departure was the creation of a ministry of marine. The ministry met the new chamber with a costly programme of social legislation and national defense. It proposed a contributory scheme of old-age pensions, compulsory school attendance, technical training suited to the needs and occupations of the various districts of the kingdom, and a drastic extension of the system of compulsory military service.

Commerce.—Provisional figures of the foreign trade of Belgium in 1911 show a total of \$1,454,826,000, of which \$800,960,000 represented imports and \$653,866,000 exports. The corresponding figures for 1910 were \$762,619,000 and \$622,194,000. Exports to the United States declined to \$37,894,351 from \$38,106,590 in 1910, while imports from the United States increased in value from \$38,970,448 to \$50,002,923.

DENMARK

Frederick VIII, King of Denmark, died suddenly in Hamburg May 14.

Late in the evening he left his hotel alone for a walk. Half an hour later he collapsed in the street, and the body, which carried no marks of identification, was removed to the mortuary of a water-front hospital, where it lay unidentified until the following morning.

The late king was born at Copenhagen June 3, 1843, and succeeded his father, Christian IX, Jan. 29, 1906. He was married July 28, 1869, to Princess Louise, daughter of Charles XV of Sweden and Norway. His short reign was uneventful and was chiefly notable for the establishment of friendly relations with Germany and the removal, in large measure, of the bitter memories of the war of 1864.

Christian X, eldest son of Frederick VIII, was proclaimed king May 15. The new king was born Sept. 26, 1870, and was married April 26, 1898, to Alexandrina, Duchess of Mecklenburg-Schwerin, sister of the German Crown Princess.

Commerce.—Denmark's foreign trade in 1911 continued to show the steady increase which has set a new high level each year over a considerable period. Imports for consumption were valued at \$167,044,400, a gain of \$12,354,800 over 1910. Exports were valued at \$142,736,800, \$11,309,600 more than in 1910. Trade with the United States increased in both imports and exports, the latter from \$1,532,766 in 1910 to \$2,394,000.

FRANCE

The New Ministry.—Completely discredited in the eyes of the nation by the revelation that considerations of international finance had been permitted to enter into the negotiations with Germany concerning Morocco, the French Ministry headed by Joseph Caillaux resigned Jan. 10. On the previous day M. Clemenceau forced M. de Selves, Minister for Foreign Affairs, to admit that the Foreign Office and Jules Cambon, the French Ambassador in Berlin, had not been kept informed of all negotiations between France and Germany, but that secret negotiations concerning railway concessions in Morocco, Kamerun and the Congo had been conducted by the Premier

and some of his associates in the Cabinet.

Raymond Poincaré, entrusted on Jan. 13 with the task of forming a new ministry, was able next day to communicate to the President a list of ministers containing several names of unusual distinction. M. Poincaré as Premier took the portfolio of Foreign Affairs. The other portfolios were assigned as follows: Justice, Aristide Briand (also Vice-President of the Council); Labor, Léon Bourgeois; War, Alexandre Millerand; Marine, Théophile Delcassé; Finance, L. L. Klotz; Interior, Jules Steeg; Public Works, Jean Dupuy; Agriculture, Jules Pams; Colonies, M. Lebrun; Public Instruction, M. Giushau; Commerce, Fernand David.

Electoral Law.—The chief legislative event of the year was the passage by the Chamber of Deputies of an electoral law restoring the regulations in force before 1889. Since that date elections to the Chamber have been conducted by the *scrutin d'arrondissement*, or balloting by districts, under which each department is divided into a number of districts, each returning one deputy, for whom alone each elector resident in the district votes. Under this system, the Chamber has become representative of a very small minority of the electors, and the return to the *scrutin de liste* is intended to secure the representation of minorities in proportion to their strength. The country is to be divided into a number of departments, to each of which a certain number of deputies are assigned. The elector may vote for as many representatives as the department possesses. In reality he will vote for a list of names corresponding to the number of deputies to be elected. Each list will be of a certain political complexion and the votes cast for it will represent a certain well defined political group. To the number of votes recorded for each list, the electoral quotient will be applied—that is, the number of votes will be divided by the quotient of the total number of French electors of the department and the number of deputies assigned to it. The result will indicate the number of

deputies to which the group represented by the list is entitled. A committee of the Senate accepted in November the principle of *scrutin de liste* but rejected the proposal that there should be a representation of minorities.

Naval Programme.—The naval programme originally drawn up by Admiral Boué de Lapeyrère, M. Delcassé's predecessor as Minister of Marine, was passed by the Chamber of Deputies Feb. 12 by a vote of 452 to 53. The scheme, estimated to cost about \$300,000,000, is designed to provide by 1920 a battle fleet of 28 ships of the line of the largest class, 10 scout cruisers and 52 sea-going destroyers. Sixteen new battleships are due to be laid down in the period 1910-17 at the rate of two a year; the four laid down in 1910 and 1911 are 25,000-ton ships. The other new ships required by 1920 to complete the programme comprise six scout cruisers, 20 destroyers, 20 submarines, and four mine vessels.

Finance.—The budget for 1913 estimates expenditure at \$932,930,000, an increase of \$33,540,000 over the previous year, \$15,000,000 of which is to go to the army and navy. The accounts are to be balanced without the imposition of new taxes by drawing on a fund which amounts practically to a loan. There is actually, however, a deficit of \$32,200,000, although revenue is estimated \$25,000,000 higher than in 1912.

Commerce.—The Morocco incident had no effect on France's foreign trade during 1911, which in the aggregate of \$2,766,219,592 exceeded that of any previous year. Of this amount \$1,575,008,731 represented imports, and \$1,191,210,861 exports. Compared with 1910 imports increased \$270,357,681, and exports \$32,104,006. Imports from the United States increased from \$108,816,295 to \$170,445,634, while exports to the United States decreased from \$81,762,713 to \$76,542,835. During the first ten months of 1912 imports showed a decrease, from \$1,325,600,000 in 1911 to \$1,295,500,000 in 1912, and exports a considerable increase, from \$987,000,000 in 1911 to \$1,075,800,000 in 1912.

The Census.—The returns of the census of March 5, 1911, published early in January, show a total population of 39,601,509, an increase of 349,264 since 1906. The most noteworthy feature of the returns is that the increase of the urban population is greater than the total increase. In 64 out of the 87 departments, the population has decreased, while in those departments which show an increase, it is very largely confined to the large towns.

GERMANY

The Elections.—At the close of 1911 Germany was in the midst of one of the most momentous electoral contests since the foundation of the Empire. No clearly defined legislative issue, such as usually occasions a general election in Germany, was presented to the people. The campaign, therefore, was largely of a tactical character, with the Government parties, somewhat more astute than their opponents, arrayed against the forces of liberalism and democracy. The middle and working classes have suffered severely by the constant rise of the cost of living, which they attributed to the high tariff on agricultural products. The tariff, however, received surprisingly little attention in the campaign, and the general dissatisfaction with the Government's conduct of the negotiations with France in the Morocco dispute, particularly with the humiliating retreat of German diplomacy after the announcement of Great Britain's attitude, had little of its anticipated prominence. Apart from the Liberal and Socialist demand for increased popular power over the Government, the most important issue was the fiscal reform of 1909 and the possibility of increased taxation in the Empire and Prussia.

The final result, with the corresponding figures in the last Reichstag, was as follows:

Socialists	110	(53)
Center	90	(103)
Conservatives	45	(58)
Free Conservatives	13	(25)
National Liberals	44	(51)
Radicals	41	(49)
Poles	18	(20)
Anti-Semites	11	(21)
Other parties	25	(17)

The Social Democrats, against whom all the political resources of the Government had been employed, were returned with a plurality of the Reichstag, and with their numerical strength more than doubled by gains about equally divided between the Blue-Black bloc and the Liberal parties.

The Reichstag.—The first session of the new Reichstag was opened by the Kaiser Feb. 7. On the 9th, after numerous divisions, the Centrist leader, Dr. Spahn, was elected President. He refused to serve with the Socialist colleague elected as First Vice-President and immediately resigned. His successor was Herr Kämpf, a Radical, elected Feb. 14 and reelected when permanent organization was effected a month later. During the summer Herr Kämpf resigned his seat on a Socialist protest; he was reelected to the Reichstag and on Nov. 26 was again reelected President. The present First Vice-President is a National Liberal, and the Second Vice-President a Radical.

Armaments.—The anticipated additions to the German army and navy were provided by two bills introduced in the Reichstag April 15. The army bill increased the peace strength by 29,000, and provided for higher pay. The cost of the increases is estimated at \$24,250,000 in 1912, \$31,750,000 in 1913, and \$28,500,000 in 1914. The navy bill added to the building programme of the next six years three battleships (one to be laid down in 1913 and one in 1916), two cruisers and several submarines. Up to 1920 the personnel of the navy is to be increased annually by an average of 75 officers and 1,600 men. The new ships are to form part of a third active squadron. The increase in the navy is expected to cost \$3,750,000 in 1912, \$7,000,000 in 1913, and \$10,750,000 in 1916. The bills were passed May 21, and the following day the Reichstag adjourned, after passing two financial bills to meet the new expenditures on armaments (see "Finance," *infra*).

The estimates for the financial year 1914, presented to the Reichstag in November, reckoned the cost of new ship construction at \$57,083,500,

a decrease of \$4,121,500 from the last budget. The personnel of the navy is increased by 3,394 officers and 69,495 men, much in excess of the normal increases of previous years.

Finance.—The budget for the fiscal year ended March 31, 1912, estimated revenue and expenditure at \$731,197,525. The estimates for the current year totalled \$704,815,000. The amount to be raised by loan to balance the extraordinary budget was \$10,940,000, compared with \$24,375,000 in the previous year. The total for the army was \$192,625,000, an increase of \$10,310,000 over the previous year, while naval expenditure was estimated actually somewhat lower than the \$114,508,500 appropriated in 1911-12. These figures, however, made no allowance for the increases in armaments later voted by the Reichstag (see "Armaments," *supra*). The Government in introducing the Army and Navy bills proposed no changes in taxation beyond the abolition of the *Liebesgabe*, a rebate of taxes granted country distilleries. Eventually, however, the Reichstag, in passing the defence bills on May 21, established a "tax on wealth" and an inheritance tax, in addition to abolishing the *Liebesgabe*.

Budget figures for 1914 published in November balanced revenue and expenditure at \$762,080,000. Among permanent increases in expenditure are \$4,025,000 for the army and \$5,375,000 for the navy. The expenditure for the navy out of loans is to be \$12,775,000, a decrease of \$7,855,000. For submarines the expenditure of \$5,000,000 is retained.

Commerce.—In spite of the Morocco incident, Germany's foreign trade in 1911 reached the new high level of \$4,338,044,802, increasing \$302,947,582, or 7.5 per cent. over 1910. Imports were valued at \$2,309,756,442, and exports at \$1,928,419,038; in 1910 the corresponding figures were \$2,126,321,988 and \$1,778,969,318. Imports of merchandise from the United States were \$282,600,000 in 1910 and \$319,800,000 in 1911, while exports to the United States in the same years were \$150,600,000 and \$152,300,000. Foreign trade continued to increase during

1912; its total value during the first half year was \$2,258,848,480, of which imports of merchandise represented \$1,210,092,436 and exports \$995,005,410, against \$1,112,572,174 and \$909,957,538, respectively, in the first half of 1911.

The Standard Oil Company.—In October the Government announced a scheme for dealing with the threatened monopoly of the German oil industry by the Standard Oil Company, which has been in practically complete control of the wholesale trade since 1890 and has in recent years pursued a vigorous campaign for control of the retail trade as well. The Government proposed the establishment of a trading company under Government control to have a charter for 30 years and to be capitalized at \$15,000,000, one-fifth of the shares of which, carrying five-fold voting powers, should be allotted to German companies which should be prohibited from transferring them without the Government's consent. The great banks and commercial houses were invited to participate in the financing of this company, which was to engage in the wholesale trade exclusively, and in October a syndicate of banks was formed to take up the shares. At the close of the year, however, owing to opposition in the Reichstag, the Government's scheme was practically abandoned.

ITALY

Annexation of Tripoli.—The opening of Parliament on Feb. 22 was accompanied by extraordinary demonstrations of patriotic fervor and enthusiasm for the Turkish war (see *Turkey, infra*). On the following day the decree of annexation of Tripoli was approved and converted into law by a majority of 431 votes against 39. The legislative session was otherwise without incident.

Finance.—The budget estimates for 1912-13, issued late in January, placed the revenue at \$516,000,000, and expenditure at \$514,000,000. These figures, however, not only take no account of war expenditure for 1912-13 nor for the preceding year after Nov. 30, 1911. The estimates for

IV. FOREIGN AFFAIRS

1912-13 were, exclusive of the war expenditure, \$84,832,000 for the army and \$42,834,000 for the navy. Supplementary estimates of \$12,000,000 for the army and \$4,250,000 for the navy were introduced in June. A financial statement issued Dec. 6 showed a surplus of \$20,000,000 for the year 1911-12. Surpluses are expected for the two following years. The actual expenditures of the year on the Turkish war were stated to have been \$132,000,000.

Commerce.—Foreign trade in 1911 was the largest in Italy's history. Exclusive of precious metals, imports were \$648,112,065, an increase of \$21,638,712 over 1910, and exports \$418,677,304, an increase of \$17,241,677. Imports from the United States increased from \$58,049,189 in 1910 to \$81,281,564, while exports to the United States declined from \$50,282,676 to \$44,194,684. During the first six months of 1912, exports were valued at \$220,329,482, an increase of \$11,797,034 over the first half year of 1910, and imports \$348,010,044, a decrease of \$2,214,495.

The Camorrist Trial.—After a trial lasting nearly 16 months, during which 650 witnesses were examined in over 300 sittings, all the Camorristi on trial at Viterbo for the murder of Cuocolo, a fellow Camorrist (see *AMERICAN YEAR BOOK*, 1911, p. 138), were found guilty on all counts by the jury on July 8. Eight of the prisoners were sentenced to 30 years' imprisonment; the others received terms ranging from four to 20 years.

PORTUGAL

Administration.—The Vasconcellos Cabinet resigned early in June, owing to dissensions between the Democrats and the Unionists, the chief supporters of the Government. The Premier retained the portfolio of Foreign Affairs in the new coalition Cabinet formed by Dr. Duarte Leite, who assumed the Ministry of the Interior. The other members of the new cabinet, and their portfolios, were: Vicente Ferreira, Finance; Correia Barreto, War; Cerveira de Albuquerque, Colonies; Correia de Lemos, Justice; Fernandes Costa,

Marine; and Costa Ferreira, Public Works.

Parliament was opened Nov. 12 in an atmosphere of depression. The Minister of Finance introduced his promised reforms, which include the refunding of the internal and part of the floating debt. The sum of \$100,000,000 is to be asked for the reorganization of the navy and army, and in order to secure funds without recourse to a foreign loan, it is proposed to increase the paper currency, by a new contract with the Bank of Portugal, from \$85,000,000 to \$130,000,000 without increasing the metallic reserves.

The strength of the Republic was tested during the year by a general strike declared in Lisbon on Jan. 29, and by monarchist rising under Capt. Paiva Conceiro. In both cases the Government acted with promptness and decision and by wholesale arrests prevented the disturbances from reaching serious proportions.

Finance.—The first budget of the republic, covering the fiscal year ending June 30, 1912, and the budget for the year 1912-13 were both presented to Parliament in January. The first showed a deficit of about \$2,000,000, which was increased to \$4,000,000 in the second. The London *Economist*, however, estimated the actual deficit for 1911-12 at nearly \$15,000,000, and considers Portuguese finances to be in a deplorable condition. The increase of expenditure over the last budget of the monarchy was about \$5,000,000, and instead of retrenching, the republican government has been wastefully extravagant. The revenue for 1911-12 was estimated at about \$76,000,000 and the expenditure at \$78,000,000.

RUSSIA

The Fourth Duma.—The Third Duma, the first to remain in session for the constitutional term of five years, was prorogued June 21 and dissolved Sept. 12. Elections to the Fourth Duma were begun Sept. 23. The result was the election of a progressive Duma, made up as follows: Right, 63; Nationalists, 90; Center, 34; Octobrists, 95; Poles, 15; Moslems, 7; Progressists, 45; Constitu-

tional Democrats, 59; Labor, 10; Social Democrats, 15; Independents, 9. Of the 442 members, about 150 may be regarded as reactionary, while 170 (Octobrists, Center, Progressists, and possibly some Poles) are prepared to form a Moderate Center party, unfriendly to the Ministry on account of its treatment of the Octobrists. The Constitutional Democrats, Labor and Socialist groups are likely to be uncompromising in opposition to the Ministry.

On the opening of the Duma on Nov. 25, the Octobrists and the Opposition united in a protest against Clerico-Bureaucratic interference with the elections and succeeded in reflecting M. Rodzianko to the presidency of the Duma.

Naval Programme.—The most important legislation of the year was the adoption by the Duma June 20, by a majority of 228 to 71, of a Navy bill providing for a capital expenditure of \$215,000,000 during the period 1912-17. The construction programme calls for four 30,000-ton, 26½-knot super-Dreadnoughts armed with nine 14-inch guns, eight small cruisers, of which four are for the Baltic; 36 destroyers for the Baltic; 18 submarines; and several auxiliary vessels. Extensive harbor improvements are to be undertaken at Kronstadt, Sveaborg, Nicolaieff, and Vladivostok, and a new naval base is to be created by 1923 at Reval, at a cost of \$35,000,000.

Finance.—The third consecutive budget without a deficit was presented to the Duma March 12. In the estimates for 1911 revenue and expenditure balanced at \$1,360,000,000; the realized surplus was upward of \$115,000,000. For 1912 the revenue was estimated at \$1,430,300,000, and expenditure at \$1,487,600,000. These figures took no account of the naval increases later voted by the Duma. The budget for 1913, introduced in the Fourth Duma late in October, was not so favorable. With an estimated revenue of \$1,540,000,000, there is an estimated deficit of \$15,000,000 to be covered by a loan. The army estimates provided for an expenditure of \$273,000,000, an increase over the last budget of over \$26,000,000.

Railways.—A Government commission appointed to devise a plan for railway development reported during the year. The report advocates the construction of approximately 20,000 miles of railways during the next five years, according to a definite and carefully conceived programme, either by State or private enterprise. The scheme is threefold: first, to link up by short, direct lines the principal cities of the Empire; second, to penetrate the vast territories hitherto inaccessible; and, third, to provide for the development of agriculture by systems of auxiliary lines. Nearly 6,000 miles of lines are projected for Asiatic Russia. Moscow is taken as the economic and strategic center of the Empire. From it radiate two of the three proposed trunk lines, one to Wilna, 500 miles long, the other to the southwest, communicating with the Balkan States. The third trunk line is projected between St. Petersburg and Alexandrovsk.

SPAIN

Administration.—The widespread industrial and revolutionary disturbances of September, 1911, led late in the year to a rupture of the friendly alliance between the dynastic Liberal party, led by Premier Canalejas, and the Republicans, Socialists, and other groups of the Left. During the last quarter of the year the Government took exceptionally severe measures throughout the kingdom to restore order and to punish the promoters of the revolutionary movement. More than three thousand strikers and agitators were imprisoned, but only a few of the more prominent agitators were held for trial. On Jan. 12 one of the most important of the agitators, convicted of murder, was granted a reprieve at the instance of the King, but against the advice of the Government, which immediately resigned. Three days later, however, the King persuaded Señor Canalejas and his ministry to resume office.

In March the Premier took advantage of a recess of the Cortes to reorganize his Cabinet. The new ministry comprised five members of the last administration: the Premier;

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Garcia Prieto, the Foreign Minister; Barroso, Minister of the Interior; and General Lugar and Admiral Pidal, the Ministers, respectively, of War and Marine; and four new Ministers, all veteran statesmen: Diego Arias de Miranda, Grace and Justice; Santiagoalba, Public Instruction; Juan Navarro Reverter, Finance; and Manual Villanueva, Public Works.

A crisis was narrowly averted early in July on the Government bill granting a measure of provincial home rule. The measure was attacked by the Conservatives as a theft from their platform, and by a certain section of the Liberals as a concession to the spirit of "regionalism" inconsistent with the tradition of their party. The Chamber, however, gave the Premier a vote of confidence, and on July 4 passed a resolution welcoming the bill by a vote of 171 to 19, later accepting the measure without a division. The defection of a large part of his support, however, placed the Premier in a position of great difficulty, and on his recommendation the King adjourned the Cortes, July 9.

Early in October the railway employees by an overwhelming vote decided upon a general strike on Oct. 8 for increased wages and a reduction of working hours. The proposed strike had the support of the revolutionary elements, and the Premier immediately issued Royal orders calling out the first reserves of the army and navy. Canalejas announced that a general strike would be suppressed by every legitimate means at the disposal of the Government. On the assurance of the Premier that reasonable demands would be favorably considered by the Government, the strike movement was suspended pending the action of the Cortes, which was summoned to meet Oct. 14. Legislation providing machinery for the peaceful settlement of labor disputes was introduced immediately after the opening.

On Nov. 12 Premier Canalejas was assassinated by an anarchist in Madrid, and the most stable administration Spain has had in many years came to an end. His successor was Count Romanones, president of the

Chamber of Deputies, whose place was taken by Señor Moret. There was no other change in the ministry.

Finance.—Revenue in 1911 amounted to \$218,371,008 and expenditure to \$201,851,945. The budget for 1912 estimated the revenue at the same figure as last year, but increased the estimate of expenditure to \$218,367,041. For 1913 a further increase to \$229,380,234 is estimated, will reduce the surplus to \$4,107,600.

Commerce.—Imports into Spain in 1911 totaled in value \$191,844,974, an increase of \$11,838,392 over the imports in 1910; exports, on the other hand, declined \$903,125 to \$173,790,359. Exports to the United States increased from \$18,686,841 to \$19,657,171.

TURKEY

Politics.—During the last quarter of 1911 the domestic affairs of Turkey reached a state of confusion which attracted the attention of the outside world little less than her external relations. The European frontier vilayets were being pillaged by revolutionary bands from Bulgaria, Montenegro and Greece, and in Asia, Armenia and Kurdistan were in a state of ferment. But the most serious indication of the weakness of the internal administration was the political strife which raged both in and outside of Parliament. Said Pasha's government, dominated by the Young Turks party, was subjected to the most vehement attacks by almost the entire Turkish press, and in opposition to it there grew up in Parliament a violently hostile coalition known as the *Entente Liberale*, comprising all political parties except the Socialists and containing many deserters from the Young Turks. The Parliamentary situation reached a crisis in December, when Said Pasha introduced an amendment to the constitution affecting most seriously the privileges of Parliament; it conferred on the Sovereign the right to dissolve the Chamber without the consent of the Senate in the event of definitive and repeated rejection of a proposal of the Cabinet as an alternative to accepting the resignation of the Cabi-

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net, and prescribed the suspension of parliamentary labors in time of war. The amendment failed of the support of the required two-thirds majority of the Chamber, and in consequence of this defeat Said Pasha and the Cabinet formed in September, 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 143), resigned on Dec. 30.

Said Pasha was again charged with the formation of a ministry. Most of the old ministers were retained in the cabinet announced Jan. 3, which included Assim Bey, Minister of Foreign Affairs; Memdukh Bey, Minister of Justice; Mahmud Shevket Pasha, Minister of War; Nail Bey, Minister of Finance. The proposed amendment to the constitution was immediately reintroduced in the Chamber and again rejected, Jan. 13; nevertheless, the Chamber was dissolved by Imperial decree on the 18th, the Senate approving the dissolution.

The general election, held early in April, resulted in a sweeping victory for the Committee of Union and Progress, obtained by gerrymander, intimidation of voters and other corrupt devices. Immediately after the meeting of the new Chamber on April 19, the opponents of the Committee, at least morally supported by nearly all the tried officials and men of character and position, began an attack on the Government's conduct of the elections and of the Turco-Italian war. Disaffection appeared in the army in June (see "The Albanian Revolt," *infra*) and on July 9 Mahmud Shevket Pasha, minister of war, resigned. On the 13th Said Pasha made a long defense of the Government's policy in the Chamber and was rewarded next day by a vote of confidence, but with several other resignations from the cabinet in prospect, the ministry resigned on July 17. On July 21 Ghazi Mukhtar Pasha was made Grand Vizier and formed the strongest cabinet in many years. It included Nazim Pasha, Minister of War; Mahmud Mukhtar Pasha, Minister of Marine; Kiamil Pasha, President of the Council; Nuradunghian Gabriel Effendi, Minister of Foreign Affairs. Ferid Pasha, Minister of the Interior; Hilmi

Pasha, Minister of Justice; and Abdarrahan Bey, Minister of Finance. The new Ministry at once appointed a commission to investigate the grievances of the Albanians, but found their projects of reform hampered by the Chamber pledged to the Committee of Union and Progress. By an ingenious straining of the constitution, therefore, they caused the dissolution of the Chamber on Aug. 5.

The ministry, however, soon became involved in new trials. Several members resigned in August, and after the great successes of the Balkan allies in October Ghazi Mukhtar Pasha retired from the Grand Vizierate. On Oct. 30 Kiamil Pasha completed his fifth ministry, which retained Nazim Pasha, Minister of War and Commander in Chief of the Turkish army, Nuradunghian Gabriel Effendi, Minister of Foreign Affairs, and Abdarrahan Bey, Minister of Finance, and included Halil Pasha, Minister of Marine; Reshid Bey, Minister of the Interior, and Arif Hikmet Pasha, Minister of Justice.

The Turco-Italian War.—At the close of 1911, after three months of war, there were 92,000 Italians in North Africa, in occupation of five points on a coastline 1,100 miles long, restricted to the defensive and without the means for penetrating far into the interior. Opposed to them, in practical control of the entire territory annexed to Italy by decree, were a few thousand Turks commanding large forces of Arab irregulars. These troops continued to harass the Italian positions, but the land operations attracted little attention. Interest was centered on the naval campaign in which Italy carried the war into Turkish waters.

The first important naval engagement of the war occurred Jan. 7, off Konfuda on the Red Sea, where seven Turkish gunboats were sunk, after hard fighting, by an Italian cruiser squadron. Beirut was bombarded on Feb. 24, in the course of an attack on two Turkish warships in the harbor, and on April 18 a squadron of 20 Italian warships bombarded the forts at the entrance to the Dardanelles. The Turkish au-

thorities at once set adrift floating mines and declared the Dardanelles closed. Navigation was suspended until after May 3, when Turkey began to clear the straits (see III, *Tripoli*). A series of attacks on Turkish islands in the *Ægean*, which continued at intervals until the close of the war on Oct. 15 (see III, *Tripoli*) was begun by the occupation of Rhodes on May 4. Late in May Turkey retaliated by ordering all Italian subjects, with the exception of artisans, widows and orphans, and members of religious orders, to leave Turkish territory within a fortnight.

The land campaign, meanwhile, was confined to the coast of Tripoli and Cyrenaica, where the hold of Italy was gradually strengthened. Gargaresh was occupied on Jan. 20 and Bu Kemmesh on April 23. The next important gain was Bu Sceifa, captured June 17. The occupation of the important coast towns was completed by the capture of Zuara on Aug. 6. The repulse, with great slaughter, of an Arab attack on Derna on Sept. 17 was the last important engagement of the war.

The Albanian Revolt.—An insurrection broke out in Albania early in May and spread with alarming rapidity. The demands of the rebels were for improved administration of justice, substitution of Albanian for Turkish officials, restitution of arms, limitation of military service in time of peace to Europe, and recognition of Albanian as the official language. On June 25 a battalion of troops mutinied at Monastir and joined the insurgents. During the following weeks there were numerous desertions from other posts. The revolted soldiery demanded the impeachment of the Hakki Pasha and Said Pasha Cabinets, whom they held responsible for the continued reverses in Tripoli, and voiced the general dissatisfaction of the army with the Committee of Union and Progress whom they had originally placed in power. The revolt, as noted above, indirectly caused the downfall of the Said Pasha ministry. Military operations against the insurgents made little progress. Late in July, however, an armistice was arranged pending the

investigation of the Albanian question by the commission appointed by the new ministry. A permanent basis of agreement was reached in August, accepted by both extremists and moderates, which granted practically all the reforms demanded, with the exception of the impeachment of the two preceding ministries and the restitution of arms, and offered full amnesty to the insurgents.

The Balkan War.—Turkey's relations with the Balkan States, which led to the outbreak of war in October are reviewed in another department of the YEAR BOOK (III, *International Relations*). The Balkan allies began the mobilization of their armies on Sept. 30; the next day Turkey called to the colors all available reserves, and on Oct. 3 Nazim Pasha was appointed commander in chief. Montenegro, in advance of the other allies, declared war on Turkey on Oct. 8 and immediately moved troops over the Albanian frontier. The objective of the Montenegrin army was Scutari, towards which the main body of the army moved in two divisions, while a third began operations in northern Albania. The first division of the main force reduced the fortresses of Detchitch on Oct. 9 and Tuzi on Oct. 16. On the latter date the northern army occupied Berane. On the 19th the second division of the main force began to advance from Podgoritza towards Scutari, taking the route to the north of Scutari Lake; on the same day the first division captured Gusinje. At Scutari the Turks made a determined stand. The bombardment of Tarabosh was begun on Oct. 18, but incessant rains interfered with the military operations and the main object of the Montenegrin campaign was unattained at the suspension of hostilities on Dec. 3. On Nov. 16, however, a Montenegrin force occupied San Giovanni di Medua, on the Adriatic.

On Oct. 17, Turkey declared war on Bulgaria and Serbia, who accepted the challenge, and a counter declaration was made by Greece. The Bulgarian army crossed the frontier in three corps. The First Corps occupied Mustafa Pasha on the 18th and immediately pushed on to

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Adrianople. The Second Corps invaded Thrace, and the Third Corps entered Macedonia, occupying without opposition several places in the Struna valley. By the 22nd the First Corps had reached the outer defences of Adrianople and on the 24th won at Kirk Kilisse the first great battle of the war. The Turkish army under Mahmud Mukhtar Pasha retreated with a considerable amount of munitions of war and was pursued by the Bulgarians, under General Savoff, who attempted by a great turning movement to cut off the Turkish main army, concentrated near Lule Burgas, from the capital. All units of the Turkish army, except that holding Adrianople, were now ordered to fall back on the main body. To meet the Bulgarian movement, the main army reconcentrated further east, with headquarters at Tchorlu. Lule Burgas was occupied by the Bulgarians on Oct. 28 and next day the great battle of the war was begun, the main Bulgarian and Turkish armies engaging along a front of 22 miles. On the 30th the left wing of Mazim Pasha's army was driven back on Tchorlu. The rout of the Turkish army of 150,000 men was complete. The Turkish loss was in the neighborhood of 25,000 killed and wounded and 2,000 prisoners. The beaten army retired in great disorder on the Tchataldja lines, closely followed by the victors. The siege of Adrianople was left to a force of 20,000 reservists, and all the available Bulgarian troops took part in the advance on the last defences of Constantinople. The retreating Turks were defeated in engagements fought on Nov. 4 and 5. Once within the Tchataldja lines, however, the broken army made a successful stand and repulsed the attack on the defences which the Bulgarians began in force on Nov. 12. The next day Turkey decided to open negotiations for a cessation of hostilities directly with the Balkan allies. The terms of the allies were submitted on Nov. 20, but were immediately rejected and military operations, which had been practically suspended for a few days, were vigorously resumed. Within a

week, however, conferences were again in progress and resulted on Dec. 3 in the signing of a protocol of armistice, providing for negotiations for a final peace. At the close of the year, therefore, the belligerent armies were resting on their arms, while peace terms were under discussion in London (see III, *International Relations*). Adrianople, meanwhile, though not revictualled, continued to hold out against the besieging force.

The Servian army under Crown Prince Alexander crossed the frontier near Vrania, and in three columns advanced on Uskub. Prishtina was occupied on Oct. 22, and Novi Bazar on the 23rd. On the 24th Kumanovo was captured after 60 hours' fighting, the Turks losing about 5,000 men. Uskub was occupied on Oct. 26, the Turkish army retiring to Ovtche Polye, after a second defeat between Kumanovo and Uskub. At Ovtche Polye they were again routed and began a continuous retreat before the victorious Servians, who now overran all northern Macedonia. A strong column anticipated the Greeks at Monastir, which was occupied on Nov. 18, after the most desperate battle of the campaign in Macedonia. The capture of Durazzo, on the Adriatic, on Nov. 28 was the last important Servian victory, and led to the most serious apprehensions of a general European war of any event of the Balkan struggle (see III, *International Relations*).

Greek armies under the command of Crown Prince Constantine invaded both Macedonia and Epirus on Oct. 18 and occupied Ellassona and other frontier towns. On the 21st troops were landed in Lemnos. On Oct. 25 the Greeks captured Selfidji and advanced on Monastir and Salonika. Prevesa, already blockaded by sea, was occupied by the army in Epirus on Nov. 2. The principal success of the Greek campaign, however, was the capture of Salonika on Nov. 8. Greece refused to become a party to the armistice signed Dec. 3 and continued both land and naval operations during December, but without material result. A Greek delegate, however, took part in the peace conference.

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On Dec. 21 the London *Economist* published the following estimate of the cost of the war, on the basis of \$2.50 per man per day of actual war, excluding the cost of mobilization and upkeep after the cessation of hostilities:

	Men	Expenditure
Bulgaria	300,000	\$35,250,000
Servia	200,000	23,500,000
Greece	150,000	24,000,000
Montenegro	40,000	5,600,000
Turkey	400,000	64,000,000
Total	1,090,000	\$152,350,000

Finance.—The budget for the year ended March 13, 1912, provided

for expenditure of \$155,385,978, as against \$141,570,897 in 1910-11. The estimated revenue was \$122,125,267, compared with \$111,565,736 the previous year. The Italian war added to the estimated expenditure extraordinary grants of about \$22,000,000. The optimistic budget for the current year, issued early in February, is of little real significance, since it makes no provision for either the Italian or the Balkan wars. Expenditure is estimated at \$150,090,000, and the revenue at \$134,000,000, leaving a deficit of \$16,090,000, as against the estimated deficit of over \$33,000,000 the previous year.

ASIA

CHINA

The Revolution.—The position of affairs at the close of 1911 offered encouraging indications of an early settlement between the monarchy and the revolutionists. During December hostilities had been suspended under the terms of an armistice concluded Nov. 30 and thrice renewed. Since Dec. 18 peace negotiations had been conducted at Shanghai by Wu Ting-fang and Tang Shao-yi; and on Dec. 28 their deliberations were limited to the consideration of methods of selecting delegates to a national convention, to which the Throne agreed, in an Imperial edict issued by Yuan Shih-kai with the unanimous consent of the Manchu princes, to leave the determination of China's future form of government. The election of Sun Yat-sen on Dec. 29 "President of the Provisional Government of the United Provinces of China," by delegates of 14 provincial assemblies in purely provisional convention at Nanking, was an event which seemed, at the time, of little significance.

On New Year's Day, Sun Yat-sen was formally inaugurated President at Nanking. In his inaugural message he pledged himself to resign the provisional office on the abdication of the Manchus and the restoration of peace. His first official act was to adopt the Gregorian calendar. On the following day, the new President

was able to complete a cabinet comprising some of the ablest men in China; with the revolutionary General Li Yuan-heng, the Vice-President, were associated Huang Sing, Premier and Minister of War; Wang Chung-hui, Foreign Minister, a graduate of Yale and a scholar of rare attainments; Chen Chin-tao, Minister of Finance; Chang-chien, Minister of Agriculture, Industry and Commerce; and Wu Ting-fang, Minister of Justice.

The terms accepted by Tang Shao-yi for the extension of the armistice on Dec. 29, 1911, pledged the monarchy to contract no foreign loan pending the meeting of the National Convention, and immediately to withdraw the Imperial troops from certain strong positions in the central provinces, which the revolutionists engaged not to occupy. On Jan. 2 the Empress-Dowager engaged to furnish Yuan Shih-kai with three million taels from the Palace funds, a sum sufficient to carry on the Government services for at least six weeks. The same day Tang Shao-yi resigned as Yuan's peace envoy, repudiated, it was said, by his chief because of his sweeping and injudicious concessions to the revolutionists. With a plentiful supply of money, Yuan Shih-kai's confidence seemed to return. In the face of the bitter protests of the revolutionists, he forced Wu Ting-fang to adopt the telegraph as a means of continuing

the negotiations; but a deadlock was very soon reached on the question of the constitution of the national convention, Yuan Shih-kai proposing three delegates from each of the 22 provinces, to be elected by the Provincial Assemblies, while Wu Ting-fang demanded the nomination of the representatives of 14 provinces in session at Nanking.

Yuan's confidence, however, was soon shaken. The mutiny of Imperial troops at Lanchau and the general condition of anarchy in Szechuan Province forced the Powers on Jan. 6 to occupy the railroad between Peking and the sea, in accordance with the terms of the protocol of 1901. On Jan. 8, Russia notified China that the autonomy of Outer Mongolia in internal affairs must be recognized, and next day Russian troops proceeded to expel Chinese from the seceded provinces. By the middle of the month Yuan Shih-kai was beset with so many difficulties that the plan of assembling a national convention had been abandoned, and, with the approval of nearly all the Manchu princes, terms for the abdication of the Emperor were under discussion. An agreement had been practically reached when the negotiations were suddenly shifted to their original basis by an Imperial edict of Jan. 25 reaffirming the Throne's decision to abide by the decision of a national convention. In a few days, however, the negotiations for abdication were resumed, and on Feb. 7 terms were finally approved by which the Emperor was granted an annual pension of \$4,000,000, Mexican; pensions were provided for the Manchu princes, and the rights and liberties of the whole Imperial clan were safeguarded by remarkably liberal provisions.

On Feb. 12 the Emperor Pu-Yi issued the momentous proclamation which closed the 267 years' reign of the Manchu dynasty and established the Chinese Republic. In three edicts the Emperor approved the favorable terms granted by the revolutionists, granted the constitutional republic demanded by the people; conferred upon Yuan Shih-kai plenary powers to establish a provisional republican government and, in coöperation with

the Nanking government, finally a constitutional republic; and exhorted the five races—Manchu, Chinese, Mongol, Mahomedan, and Tibetan—and all sections of the people to assist in the peaceful establishment of a perfect government. Without disturbance or tumult of any kind, the abdication of the Emperor was accomplished, and the authority of the new republic was established amid universal expressions of satisfaction.

The Republic.—On Feb. 15 the provisional assembly at Nanking, representing 17 provinces, unanimously elected Yuan Shih-kai Provisional President of the Republic, and accepted the resignation of Sun Yat-sen and the provisional cabinet, to take effect on the arrival of the new President at Nanking. On the 20th Li Yuan-hung was elected Vice-President. It was made a condition of Yuan's election that he should take the oath of office at Nanking, where the assembly insisted that the seat of the provisional government be retained. In his letter of acceptance Yuan Shih-kai pointed out the danger to China's international relations of his withdrawal from Peking, and when a deputation arrived on Feb. 24 to escort him to Nanking, he was still unready to abandon the capital. A deadlock was prevented only by the outbreak of a serious mutiny among the Manchu troops in Peking on Feb. 29; the revolt spread to Tientsin and other cities, which, like Peking, were looted and terrorized for several days until order was restored by Chinese and foreign troops. Conditions in the north were so unsettled, however, that the Nanking assembly on March 7 agreed to the inauguration of Yuan Shih-kai at Peking in the presence of the Nanking delegates. Accordingly the first President of China was formally installed in office on March 10 and immediately set about the consolidation of his government.

In accordance with the terms of the agreement by which Yuan Shih-kai was permitted to remain in Peking, he immediately appointed Tang Shao-yi premier, with the approval of the Nanking delegates, and dispatched him to Nanking to form a Cabinet. The following ministry was

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approved March 29: Foreign Affairs, Yi Cheng-hsiang (Minister at St. Petersburg); Interior, Chao Ping-chun; Finance, Hsuing Hsi-ling; Education, Tsai Yuan-pei; Justice, Wang Chung-hui; Agriculture and Forestry, Sung Chiao-jen; Industries and Commerce, Chen Chi-mei; Communications, Tang Shao-yi (Premier); War, Tuan Chih-jui; Navy, Lu Kuan-hsiung. On April 1 Sun Yat-sen and the provisional cabinet retired, and the next day the assembly agreed to the removal of the seat of government to Peking.

Apart from the loan negotiations, the course of which is traced on another page (see III, *China*), few events occurred during the remainder of the year to engage the attention of the outside world. Frequent mutinies of troops and isolated outbreaks of anarchy made the task of maintaining order a difficult one, hampered as the government was by lack of funds. Mutinies of more than ordinary severity were reported from Nanking on April 12, and from Tung-Chow near Peking late in August; in all cases the government acted promptly and suppressed the insurrections before they attained large proportions. Still, the whole country remained to the end of the year in a dangerously unsettled condition.

Pending the inauguration of Parliament, the functions of the National Assembly were exercised by the Advisory Council, at the opening of which at Peking on April 29 Yuan Shih-kai delivered his first message on the administrative policy of the new government. He urged the necessity of maintaining domestic peace and foreign friendships. Financial reform was imperative as a means of attracting foreign capital, and the government had proposed to the Powers an increase of customs duties, partly offset by the reduction of export taxes and the abolition of likin duties, by which the customs revenue would be increased from \$30,800,000 to \$42,000,000. The President urged also the employment of foreign financial experts in the Finance Ministry to ensure a correct budget and proper accounting.

The finances of the revolution and

the republic led to serious dissensions between the Council and the cabinet throughout May. The budget for 1912 showed estimates of revenue \$207,900,000, and of expenditure \$403,200,000. The violent attacks of the Council on the enormous deficit and on the conduct of the loan negotiations led to the resignation of the Premier, Tang Shao-yi, on May 23, and although Yuan Shih-kai and the Cabinet made every effort to persuade him to remain in office, he retired June 15. His successor was Lu Cheng-hsiang, Minister of Foreign Affairs, appointed June 30. The Cabinet was disrupted on July 15 by the resignation of the Ministers of Finance, Justice, Education, and Agriculture and Forestry; the Minister of Industries and Commerce had resigned previously. The bitter hostility of the Council to the Executive was emphasized by the rejection of Yuan Shih-kai's first appointments for the reorganization of the Cabinet. A revised list was ratified, with one exception, on July 26, only, it was believed, through fear of the military commanders supporting Yuan Shih-kai, who threatened, in the event of further obstruction, to proceed to Peking and dissolve the Council by force. Resentment against this first suggestion of a military dictatorship was intensified by the summary arrest and execution at Peking on Aug. 16 of the revolutionary generals Chang Chen-wu and Fang Wei, the original leaders of the revolt at Wuchang and members of Tung-Men-Hui, Sun Yat-sen's original Southern revolutionary organization, now virtually in control of the Advisory Council. The Council threatened to impeach the Government and summoned Yuan Shih-kai to defend the executions in person. Instead of complying, Yuan invited the Hupeh delegates to visit him, and he so thoroughly convinced them that the two generals were properly executed as conspirators against the government, that the Hupeh delegates undertook to persuade the Council to abandon the impeachment proceedings. The hands of the Government were strengthened by the arrival of Sun Yat-sen at Peking Aug. 24 and his cordial endorsement of Yuan

Shih-kai's administration. The incident passed without creating a serious crisis, and served the useful purpose of impressing on the people the resolve of the government to deal vigorously with embarrassing intrigues.

In September Liang Men-ting entered the Cabinet as Minister of Foreign Affairs, the premier giving up the portfolio. He resigned in November, failing to agree with the Cabinet on the Mongolian question.

The National Assembly.—The draft of a bill for the organization of the new National Assembly, to be elected early in 1913, was published in August. It will be the duty of the new Assembly, which is to comprise a Senate and a Chamber of Representatives, to draw up a constitution and arrange for the election of a President. The Senate is to have 264 members, nominated by the provinces and dependencies (Tibet, Mongolia, and Turkestan). The Chamber will have 603 members, one for each 800,000 of the population.

JAPAN

Death of the Emperor.—Mutsuhito, Emperor of Japan, died at Tokyo, July 30, after a long illness. The late Emperor was born Nov. 3, 1852, and succeeded to the Throne as the hundred and twenty-second representative of his line in January, 1867. One of his first sovereign acts was the decree of Feb. 14, 1868, which invited treaties of amity with foreign Powers and opened Japan to foreign intercourse. After his coronation on Nov. 26, 1868, the Throne became the pivot of government, and for over 40 years continued to guide the process by which Japan was raised from an insignificant feudal state to its present place among the great Powers of the world. Mutsuhito's reign was known as Meiji, the Era of Enlightenment, and as such it will probably remain forever the most memorable in the annals of Japan.

The body of Mutsuhito was placed in the imperial mausoleum at Monoyama, near Kyoto, Sept. 14. The United States was officially represented at the funeral by the Secretary of State, Philander C. Knox. The suicide of General Count Mara-

suke Nogi and his wife on Sept. 13, as the funeral procession started from the palace in Tokyo was a striking reminder of the vitality of the spirit of Old Japan, which has survived the marvelous changes of recent years.

The New Emperor, Yoshihito Harunomiya, third son of Mutsuhito, was born Aug. 31, 1879. He was married, May 10, 1900, to Princess Sadako, daughter of Prince Kujo Michitaka, who has borne him three sons. His reign is to be known as Faisko, Era of Great Righteousness.

Administration.—The general election held in May resulted as follows: Sei Yukai (Unionist Party), 217; Nationalists, 89; Central Club, 27; Independents, 44. Both the Unionists and the Independents won more seats than they had in the last House of Representatives.

The Saionji ministry, which assumed office in September, 1911, was not long in restoring the confidence of economic circles, which had been rudely shaken by the steady increase in taxation under the Katsura administration. The new finance minister, Dr. Yamamoto, inaugurated a policy of retrenchment and curtailment of increases in armament. On the latter question the ministry came to grief. Baron Ishimoto, minister of war, died in April. He was succeeded by General Uehara, an ardent supporter of the long-standing proposal to establish two permanent military divisions in Korea. Dissensions in the Cabinet over this expansion of the military establishment, which the Premier refused to support as unnecessary in view of the friendly relations with Russia and incompatible with the ministerial policy of retrenchment, became acute in the early fall. General Uehara resigned on Dec. 2, and three days later Marquis Saionji, the Premier, unable to fill the portfolio, handed his resignation to the Emperor. The offer of the premiership was refused by several statesmen, and on Dec. 17 Prince Katsura was directed by the Emperor to form a Cabinet.

The Premier assumed the portfolio of Foreign Affairs, and on Dec. 19 announced his Cabinet as follows: Baron Dura, home affairs; Baron

IV. FOREIGN AFFAIRS

Goto, communications and railways; Nakashoji Ren, agriculture; Wakatsuki Reijiro, finance; M. Matsumuro, justice; Shibata Kamon, education; Baron Kikoshi Yasutsuma, war; and Admiral Saito, navy.

Finance.—In the budget for the fiscal year ending March 31, 1913, revenue and expenditure balance at \$286,445,933. Extraordinary revenue is estimated at \$35,168,030, of which \$26,298,270 will be borrowed, and extraordinary expenditure at \$80,463,001, of which \$25,000,000 will be

set aside for the redemption of national debt and \$20,000,000 for railway construction.

Commerce.—The foreign trade of Japan in 1911 reached the record figure of \$478,697,317, of which imports represented \$255,875,241 and exports \$222,822,076. Compared with 1910 imports increased \$24,686,805, and exports decreased \$5,475,564. Imports from the United States increased from \$27,240,185 in 1910 to \$40,462,953; exports to the United States were valued at \$71,077,370.

COMMERCE OF THE PRINCIPAL COUNTRIES OF THE WORLD

	Year	Imports of Merchandise	Imports from United States	Exports of Merchandise	Exports to United States
Argentina.....	1911	353,972,311	50,521,021	313,333,124	23,449,947
Australia.....	1911	325,375,665	43,777,213	386,283,774	7,115,794
Austria-Hungary.....	1911	667,000,000	58,800,000	516,200,000	12,500,000
Belgium.....	1910	823,137,000	44,619,000	657,634,000	22,609,000
Bolivia.....	1910	18,990,000	2,142,000	29,200,000	37,894,351
Brazil.....	1910	235,575,000	30,254,000	310,006,000	112,184,000
Bulgaria.....	1910	34,230,000	165,000	24,907,000	216,000
Canada.....	'11-'12	555,448,604	364,339,890	315,317,250	120,534,993
Chile.....	1910	108,582,000	13,370,000	120,022,000	24,681,000
China.....	1911	306,812,000	26,534,854	245,538,000	22,077,691
Colombia.....	1910	17,026,000	4,637,000	17,625,000	7,703,000
Costa Rica.....	1911	8,872,161	4,106,923	8,924,191	4,920,798
Cuba.....	1911	108,007,000	57,053,000	128,542,000	112,834,000
Denmark.....	1910	170,021,000	16,320,000	146,884,000	9,572,000
Dominican Republic.....	1910	6,409,000	3,885,000	10,850,000	7,661,000
Ecuador.....	1910	7,026,000	2,108,000	13,057,000	3,644,000
Egypt.....	1911	136,135,590	1,609,800	142,994,955	15,838,323
France.....	1911	1,575,008,731	170,445,634	1,191,210,361	76,542,835
Germany.....	1911	2,309,800,000	319,800,000	1,928,400,000	152,300,000
Great Britain.....	1911	3,311,941,226	606,112,871	2,210,765,592	139,466,184
Greece.....	1910	30,983,448	813,000	27,902,203	2,034,000
Guatemala.....	1909	5,251,317	2,181,859	10,079,219	2,739,075
Haiti.....	1911	7,948,117	5,790,203	18,553,660	350,730
Honduras.....	1910	3,019,416	1,707,692	2,571,916	2,522,566
India (British).....	1911	419,686,000	11,323,000	664,676,000	43,312,000
Italy.....	1911	648,112,065	81,281,564	418,677,304	44,194,684
Japan.....	1911	255,875,241	40,462,953	222,822,076	71,077,370
Korea.....	1910	19,812,000	1,596,000	9,917,000	152,000
Liberia.....	1908	966,000	50,000	884,000	1,000
Mexico.....	1911	95,156,307	53,097,939	145,992,568	109,604,938
Netherlands.....	1911	1,332,874,000	96,103,769	1,090,848,000	32,926,492
New Zealand.....	1911	95,037,044	8,200,029	92,513,928	2,112,068
Nicaragua.....	1909	2,583,257	1,341,692	3,989,428	1,677,010
Norway.....	1910	107,761,000	7,714,000	75,737,000	6,317,000
Panama.....	1911	9,865,454	5,104,233	2,853,725	2,566,115
Paraguay.....	1910	6,734,635	307,674	4,785,623	2,071
Persia.....	1911	49,904,000	30,000	38,669,000	519,000
Peru.....	1909	20,919,000	4,118,000	31,597,000	7,278,000
Portugal.....	1909	69,939,000	7,472,000	33,350,000	934,000
Roumania.....	1910	79,075,000	479,364	118,985,000	36,181
Russia.....	1910	490,825,000	19,533,761	712,584,000	13,828,265
Finland.....	1909	70,721,000	.....	49,112,000	.....
Salvador.....	1910	3,745,249	1,560,674	7,297,836	1,241,128
Servia.....	1910	16,146,000	202,000	18,989,000	908,000
Siam.....	1911	25,375,000	647,000	40,542,000	19,000
Spain.....	1910	198,800,576	19,844,335	193,553,200	11,988,290
Sweden.....	1911	180,267,000	7,973,820	173,333,000	8,887,641
Switzerland.....	1911	347,855,281	14,491,374	242,662,066	25,852,404
Turkey.....	'09-'10	147,276,997	2,259,588	80,073,168	3,067,635
United States.....	1912	1,653,264,934	.....	2,204,322,400	.....
Philippines.....	1912	54,549,980	20,604,155	50,319,836	21,517,777
Uruguay.....	1910	42,797,000	4,877,000	43,333,000	4,611,000
Venezuela.....	1911	15,475,000	4,025,000	18,706,000	6,098,000

V. THE NATIONAL ADMINISTRATION

THE PRESIDENT AND VICE-PRESIDENT

PRESIDENTS OF THE UNITED STATES

NAME	Born	Residence when Elected	Politics	In-augurated	Died
1 George Washington.	Feb. 22, 1732	Mount Vernon, Va.	None..	1789	Dec. 14, 1799
2 John Adams	Oct. 30, 1735	Quincy, Mass.	Fed....	1797	July 4, 1826
3 Thomas Jefferson...	April 13, 1743	Monticello, Va.	Dem....	1801	July 4, 1826
4 James Madison.....	Mar. 16, 1751	Montpelier, Va.	Dem....	1809	June 28, 1836
5 James Monroe.....	April 28, 1758	Oak Hill, Va.	Dem....	1817	July 4, 1831
6 John Quincy Adams.	July 11, 1767	Quincy, Mass.	Fed....	1825	Feb. 23, 1848
7 Andrew Jackson.....	May 15, 1767	Hermitage, Tenn.	Dem....	1829	June 8, 1845
8 Martin Van Buren...	Dec. 5, 1782	Kinderhook, N. Y.	Dem....	1837	July 24, 1862
9 William H. Harrison	Feb. 9, 1773	North Bend, O.	Whig...	1841	April 4, 1841
10 John Tyler.....	Mar. 29, 1790	Williamsburg, Va.	Dem....	1841	Jan. 17, 1862
11 James Knox Polk....	Nov. 2, 1795	Nashville, Tenn.	Dem....	1845	June 15, 1849
12 Zachary Taylor.....	Nov. 24, 1784	Baton Rouge, La.	Whig...	1849	July 9, 1850
13 Millard Fillmore....	Jan. 7, 1800	Buffalo, N. Y.	Whig...	1850	Mar. 9, 1874
14 Franklin Pierce.....	Nov. 23, 1804	Concord, N. H.	Dem....	1853	Oct. 8, 1869
15 James Buchanan.....	April 23, 1791	Wheatland, Pa.	Dem....	1857	June 1, 1868
16 Abraham Lincoln....	Feb. 12, 1809	Springfield, Ill.	Rep....	1861	April 15, 1865
17 Andrew Johnson.....	Dec. 20, 1808	Greenville, Tenn.	Rep....	1865	July 31, 1875
18 Ulysses S. Grant.....	April 27, 1822	Washington, D. C.	Rep....	1869	July 23, 1885
19 Rutherford B. Hayes	Oct. 4, 1822	Fremont, O.	Rep....	1877	Jan. 17, 1893
20 James A. Garfield...	Nov. 19, 1831	Mentor, O.	Rep....	1881	Sept. 19, 1881
21 Chester A. Arthur...	Oct. 5, 1830	New York City	Rep....	1881	Nov. 18, 1886
22 Grover Cleveland....	Mar. 18, 1837	Buffalo, N. Y.	Dem....	1885	June 24, 1908
23 Benjamin Harrison...	Aug. 20, 1833	Indianapolis, Ind.	Rep....	1889	Mar. 13, 1901
24 Grover Cleveland....	Mar. 18, 1837	New York City	Dem....	1893	June 24, 1908
25 William McKinley...	Jan. 29, 1843	Canton, O.	Rep....	1897-'01	Sept. 14, 1901
26 Theodore Roosevelt.	Oct. 27, 1858	Oyster Bay, N. Y.	Rep....	1901	.....
27 William H. Taft.....	Sept. 15, 1857	Cincinnati, O.	Rep....	1909	.....
28 Woodrow Wilson ¹ ...	Dec. 28, 1856	Princeton, N. J.	Dem....	.....	.....

¹ President-elect; assumes office March 4, 1913.

THE ELECTORAL COLLEGE

The ratio of representation in the House of Representatives, upon which the Electoral College is based, has been as follows:

Constitution, 1789, ratio 30,000.....	65	Seventh Census, 1853, ratio 93,423.....	233
First Census, 1793, ratio 33,000.....	105	Eighth Census, 1863, ratio 127,381.....	243
Second Census, 1803, ratio 33,000.....	141	Ninth Census, 1873, ratio 131,425.....	293
Third Census, 1813, ratio 35,000.....	181	Tenth Census, 1883, ratio 151,911.....	325
Fourth Census, 1823, ratio 40,000.....	213	Eleventh Census, 1893, ratio 173,900.....	356
Fifth Census, 1833, ratio 47,700.....	240	Twelfth Census, 1900, ratio 194,182.....	386
Sixth Census, 1843, ratio 70,680.....	223	Thirteenth Census, 1910, ratio 211,877... 435	

The population at each census for purposes of representation was as follows:

1790.....	3,929,214	1840.....	17,069,453	1890.....	50,155,783
1800.....	5,308,483	1850.....	23,191,876	1890.....	62,622,250
1810.....	7,239,881	1860.....	31,443,321	1900.....	74,565,900
1820.....	9,633,822	1870.....	38,558,371	1910.....	91,402,151
1830.....	12,866,020				

V. THE NATIONAL ADMINISTRATION

VOTE FOR PRESIDENT, 1908 AND 1912

STATE	1908				1912							
	Taft, Republican		Bryan, Democrat		Wilson, Democrat		Roosevelt, Progressive		Taft, Republican		Debs, Socialist	
	Elec-toral	Popu-lar	Elec-toral	Popu-lar	Elec-toral	Popu-lar	Elec-toral	Popu-lar	Elec-toral	Popu-lar	Elec-toral	Popu-lar
Alabama.....		25,308	11	74,374	12	82,438		22,680		9,732		3,029
Arizona.....					3	10,324		6,951		2,986		3,163
Arkansas.....		56,760	9	87,015	9	68,838		21,673		24,467		8,153
California.....	10	214,398		127,492	2	283,436	11	283,610		3,914		79,201
Colorado.....		123,700	5	126,644	6	114,232		72,306		58,386		16,418
Conn.....	7	112,915		68,255	7	74,501		34,129		68,324		10,056
Delaware.....	3	25,014		22,071	3	22,631		8,886		15,997		556
Florida.....		10,654	5	31,104	6	36,417		4,535		4,279		4,806
Georgia.....		41,692	13	72,413	14	93,076		21,980		5,181		1,028
Idaho.....	3	52,621		36,162	4	33,921		25,527		32,810		11,960
Illinois.....	27	629,929		450,795	29	405,048		386,478		253,593		81,278
Indiana.....	15	348,993		338,262	15	281,890		162,007		151,267		36,931
Iowa.....	13	275,210		200,771	13	185,325		161,819		119,805		16,967
Kansas.....	10	197,216		161,209	10	143,663		120,210		74,845		26,779
Kentucky.....		235,711	13	244,092	13	219,584		102,766		115,512		11,647
Louisiana.....		8,958	9	63,568	10	60,971		9,323		3,834		5,249
Maine.....	6	66,987		35,403	6	51,113		48,495		26,545		2,541
Maryland.....	2	116,513	6	115,908	8	112,674		57,789		54,958		3,996
Mass.....	16	265,966		155,543	18	173,408		142,228		155,948		12,616
Michigan.....	14	335,580		175,771		150,751	15	214,584		132,344		23,211
Minnesota.....	11	195,843		109,401		196,426	12	125,856		64,334		27,505
Mississippi.....		4,363	10	60,287	10	57,227		3,645		1,595		2,061
Missouri.....	18	347,203		346,574	18	330,746		124,371		207,821		28,466
Montana.....	3	32,333		29,326	4	27,941		22,456		18,512		10,885
Nebraska.....		126,997	8	131,099	8	109,008		72,614		54,216		10,174
Nevada.....		10,775	3	11,212	3	7,986		5,620		3,196		3,313
New Hamp.....	4	53,149		33,655	4	34,724		17,794		32,927		1,980
New Jersey.....	12	265,326		182,567	14	178,289		145,410		88,835		15,901
New Mex.....					3	20,437		8,347		17,733		2,859
New York.....	39	870,070		667,468	45	655,475		390,021		455,428		63,381
No. Car.....		114,937	12	136,995	12	144,507		69,130		29,139		1,025
No. Dak.....	4	57,680		32,885	5	29,555		25,726		23,090		6,966
Ohio.....	23	572,312		502,721	24	423,153		229,327		277,066		89,930
Oklahoma.....		110,474	7	122,363	10	119,156		(b)		90,786		42,262
Oregon.....	4	62,530		38,049	5	47,064		37,600		34,673		13,343
Penn.....	34	745,779		448,778		395,619	38	447,426		273,305		80,915
R. Isl.....	4	43,942		24,706	5	30,412		16,878		27,703		2,049
So. Car.....		3,965	9	62,290	9	48,357		1,293		536		164
So. Dak.....	4	67,536		40,266		48,982	5	58,811		(c)		4,662
Tennessee.....		118,324	12	135,608	12	130,275		53,710		59,392		3,492
Texas.....		65,666	18	217,302	20	219,489		26,735		28,530		24,896
Utah.....	3	61,028		42,601		36,579		24,174	4	42,100		9,023
Vermont.....	4	39,552		11,496		15,354		22,132	4	23,332		928
Virginia.....		52,573	12	82,946	12	90,332		21,777		23,288		820
Wash.....	5	106,062		58,691		86,840	7	113,698		70,445		40,134
West Va.....	7	137,869		111,418	8	113,046		78,977		56,667		15,336
Wisconsin.....	13	247,747		166,632	13	164,228		62,460		130,695		33,481
Wyoming.....	3	20,846		14,918	3	15,310		5,232		14,560		2,760
Total.....	321	7,679,006	162	6,409,106	435	6,290,818	88	4,123,206	8	3,484,529		898,296
Plurality.....	159	1,269,900										

NOTE.—In 1908 there were cast for Debs (Socialist), 420,820 votes; for Chafin (Prohibition), 252,683; for Hagen (Independence League), 83,562; for Watson (Populist), 28,131; for Gillhaus (Socialist-Labor), 13,825. In 1912 there were cast for Chafin (Prohibitionist), 207,965 votes; for Reimer (Socialist-Labor), 29,071. The total vote in 1908 was 14,887,133; in 1912, 15,033,885; these figures do not include blank or void ballots or scattering votes for names not appearing on any electoral ticket.

^a Roosevelt electors not on ballot.

^b Taft electors not on ballot.

President (salary, \$75,000; traveling expenses, \$25,000): William Howard Taft, Ohio. Mr. Taft was defeated for reelection Nov. 5, 1912, and retires March 3, 1913.

Secretary to the President (sal-

ary, \$7,500): Charles D. Hilles, New York. Mr. Hilles retired July 17 to assume the chairmanship of the Republican National Committee. He was succeeded by Carmi A. Thompson, of Ohio, who held office until

V. THE NATIONAL ADMINISTRATION

Nov. 20, when he became Treasurer of the United States. Mr. Hilles then resumed the position of secretary to the President.

Vice-President (salary, \$12,000): James Schoolcraft Sherman, Vice-President of the United States, died Oct. 30, 1912 (see I, *American History*). The Vice-President presides over the Senate with no vote except in case of a tie. During the third session of the Sixty-second Congress, the Vice-President's functions are being exercised by the Presidents *pro tempore* of the Senate, Senators A. O. Bacon, of Georgia, and Jacob

M. Gallinger, of New Hampshire, elected Dec. 16 to serve alternate fortnights.

The President and Vice-President are elected for terms of four years by the state Electoral Colleges, whose membership is based upon the congressional apportionment as shown on a subsequent page. This apportionment is revised by Congress after each decennial census. The official figures of the electoral and popular votes for President and Vice-President in the election of Nov. 5, 1912, are given in the table on the preceding page.

EXECUTIVE DEPARTMENTS

Nine cabinet officers, constituting the President's advisory council, and each in charge of one of the great departments of the Government, are nominated by the President and confirmed by the Senate, for a term subject to the President's pleasure. Salary, \$12,000 each.

With two exceptions, the present cabinet was appointed March 6, 1909. These are Walter L. Fisher, appointed Secretary of the Interior, March 7, 1911, and Henry L. Stimson, Secretary of War, May 12, 1911. All of the members of the present cabinet retire with President Taft, March 3, 1913.

By act of Congress, in the case of vacancy in office of the President and Vice-President, the cabinet officers succeed to the Presidency in the order named below:

DEPARTMENT OF STATE

Secretary of State.—Philander Chase Knox, Pa.

Charged with negotiations relating to foreign affairs.

Assistant Secretary.—Huntington Wilson, Ill. \$5,000.

Second Assistant Secretary.—Alvey A. Adee, D. C. \$4,500.

Third Assistant Secretary.—Chandler Hale, Me. \$4,500.

Director of the Consular Service.—Wilbur J. Carr, N. Y. \$4,500.

Counselor.—Chandler P. Anderson, N. Y. \$6,000.

Solicitor.—Joshua R. Clark, Utah. \$5,000

Resident Diplomatic Officer.—
\$7,500.

Thomas C. Dawson, resident diplomatic officer, died May 1. No successor has been appointed.

Bureau of Accounts.—Chief Thomas Morrison, N. Y. \$2,300.

Bureau of Appointments.—Chief, M. M. Shand, N. J. \$2,100.

Bureau of Citizenship.—Chief, Richard W. Flournoy, Jr., Md. \$2,100.

Consular Bureau.—Chief, Herbert C. Hengstler, Ohio. \$2,250.

Diplomatic Bureau.—Chief, Sydney Y. Smith, D. C. \$2,250.

Bureau of Indexes and Archives.—Chief, John R. Buck, Me. \$2,100.

Bureau of Rolls and Library.—Chief, John A. Tonner, O. \$2,100.

Bureau of Trade Relations.—Chief, John Ball Osborne, Pa. \$2,100. Charged with compilation of commercial information for the use of the Department of State, and with collection of consular reports.

Division of Latin American Affairs.—Chief, William T. S. Doyle, Cal. \$4,500.

Division of Far-Eastern Affairs.—Chief, Ransford S. Miller, N. Y. \$4,500.

Division of Near-Eastern Affairs.—Asst. Chief, ———. \$2,500.

Division of Information.—Chief, Sevelton L. Brown, D. C. \$3,000.

TREASURY DEPARTMENT

Secretary of the Treasury.—Franklin MacVeagh, Ill.

Charged with management of the national finances. He prepares plans for improvement of the revenue and support of the public credit; superintends collection of the revenue; grants warrants for all moneys paid

from and into the Treasury; controls construction of public buildings; coinage and printing of money; and the administration of the life-saving, revenue cutter, and the public health service.

Assistant Secretaries.—James F. Curtis, Mass., Robert O. Bailey, D. C., Sherman P. Allen, Vt., \$5,000 each.

A. Piatt Andrew, second in rank of the Assistant Secretaries of the Treasury, resigned July 3, because of differences in administrative matters between himself and Secretary MacVeagh. The divisions and bureaus presided over by Mr. Andrew were placed in charge of Mr. Bailey, third in rank of the Assistant Secretaries. The vacancy was filled on July 17 by the appointment of Mr. Allen, formerly Chief Clerk in the White House.

Supervising Architect.—Oscar Wenderoth, \$6,000. Charged with superintending the construction and repair of public buildings.

Engraving and Printing.—Chief of Bureau, Joseph E. Ralph, Ill., \$6,000. Produces all the securities and similar work of the Government printed from steel plates.

Secret Service.—Chief, William J. Flynn, New York. \$4,000. Charged with detection of counterfeiting, and similar frauds on the Government.

Mr. Flynn was appointed in December, 1912, succeeding John E. Wilkie, resigned, 1911.

Comptroller of the Treasury.—Robert J. Tracewell, Ind. \$6,000. Construes the laws relating to appropriations and methods of rendering and stating accounts.

Treasurer of the United States.—Carmel A. Thompson, Ohio. \$8,000. Charged with the receipt and disbursement of all public moneys deposited in the Treasury and sub-treasuries and in national bank depositories.

Lee McClung, Treasurer of the United States since Nov. 1, 1909, resigned Nov. 14. His successor, Carmel A. Thompson, filled the office of Secretary to the President July 17 to Nov. 20, when he was appointed Treasurer.

Comptroller of the Currency.—Lawrence O. Murray, New York. \$5,000. Has supervision of the national banks, their examination and reports; the preparation and issue of national bank circulation; the redemption and destruction of national bank notes.

Internal Revenue.—Commissioner, Royal E. Cabell, Va. \$6,000. General supervision of the collection of all internal revenue taxes, and the enforcement of internal revenue laws.

The Mint.—Director, George E. Roberts, Ia. \$5,000. General supervision of the mints and assay offices.

Public Health Service.—Surgeon-General, Rupert Blue. \$8,000. Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious diseases; supervision of the quarantine service of the United States, and of the marine hospitals.

By an Act of Congress approved Aug. 14, the name of this Bureau was changed from "Public Health and Marine Hospital Service" and its powers materially enlarged. Dr. Blue was appointed Surgeon-General on Jan. 5. (See XXX, *Public Health and Hygiene*.)

WAR DEPARTMENT

Secretary of War.—Henry Lewis Stimson, N. Y.

Charged with supervision of national defense, and army expenditures.

Assistant Secretary of War.—Robert Shaw Oliver, N. Y. \$5,000.

The General Staff.—Chief, Maj.-Gen. Leonard Wood. Charged with preparation of plans for the national defense, and the promotion of the efficiency of the Army.

The chiefs of the military bureaus are as follows:

Adjutant-General.—Brig.-Gen. George Andrews. \$8,000.

General Andrews became Adjutant-General in 1912, succeeding Maj.-Gen. F. C. Ainsworth. (See XII, *The Army*.)

Inspector-General.—Brig.-Gen., E. A. Garlington. \$6,000.

Judge-Advocate General.—Brig.-Gen. E. H. Crowder. \$6,000.

Quartermaster-General.—Brig.-Gen. J. B. Aleshire. \$6,000.

Commissary-General.—Brig.-Gen. H. G. Sharpe. \$6,000.

Surgeon-General.—Brig.-Gen. G. H. Torney. \$6,000.

Paymaster-General.—Brig.-Gen. George R. Smith. \$6,000.

General Smith succeeded Brig.-Gen. C. H. Whipple in 1912.

Chief of Engineers.—Brig.-Gen. William H. Bixby. \$8,000.

Chief of Ordnance.—Brig.-Gen. William Crozier. \$6,000.

Chief Signal Officer.—Brig.-Gen. James Allen. \$6,000.

Chief of Bureau of Insular Affairs.—Brig.-Gen. Frank McIntyre. \$6,000.

General McIntyre succeeded Brig.-Gen. C. R. Edwards, who retired in 1912.

Board of Engineers for Rivers and Harbors.—A permanent body which in-

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vestigates in their engineering and economic aspects all surveys and river and harbor improvements proposed by Congress.

DEPARTMENT OF JUSTICE

Attorney-General.—George Woodward Wickersham, N. Y.

Represents the United States in all legal matters.

Solicitor-General.—William M. Bullitt, Ky. \$10,000. Charged with the business of the Government in the Supreme Court and in State Courts.

Mr. Bullitt was nominated by President Taft on July 1, succeeding Frederick W. Lehmann, resigned.

Assistant to Attorney-General.—James A. Fowler, Tenn. \$7,000. Charged with matters arising under the federal anti-trust and interstate commerce laws. There are seven Assistant Attorneys General; salary, \$5,000 each.

POST OFFICE DEPARTMENT

Postmaster General.—Frank Harris Hitchcock, Mass.

Has direction and management of the Post Office Department.

First Assistant Postmaster-General.—C. P. Grandfield, Mo. \$5,000. Charged with postmasters' appointments; salaries and allowance; city delivery service.

Second Assistant Postmaster-General.—Joseph Stewart, Mo. \$5,000. Charged with railway adjustments, miscellaneous transportation, foreign mails, railway mail service, inspection equipment.

Third Assistant Postmaster-General.—James J. Britt, N. C. \$5,000. Charged with financial system, stamps, money orders, registered mails, classification of domestic mail matter, redemption.

Fourth Assistant Postmaster-General.—P. V. DeGraw, Pa. \$5,000. Charged with rural mails, supplies, dead letters, post route maps.

Postal Savings System.—Director, Theodore L. Weed, formerly chief clerk in the Post Office Department, appointed Jan. 1, 1912.

NAVY DEPARTMENT

Secretary of Navy.—George von Lengerke Meyer, Mass.

Charged with direction of the Navy and superintendence of construction, equipment, and employment of vessels of war.

Assistant Secretary.—Beekman Winthrop, New York. \$5,000.

General Board of the Navy.—The General Board is advisory to the Secretary of the Navy, and is composed of the following officers:

Admiral of the Navy George Dewey, president; Rear-Adm., C. E. Vreeland, aid for operations; Rear-Adm., J. B. Murdock; Capt. T. M. Potts; Capt. H. S. Knapp; Capt. John Hood; Capt. W. R. Shoemaker; Capt. A. G. Winterhalter; Capt. W. L. Rodgers; Commander H. J. Ziegemeier, secretary.

Bureau of Yards and Docks.—Chief, Civil Engineer H. R. Stanford. \$6,000. Charged with the construction and maintenance of docks and naval buildings.

Bureau of Navigation.—Chief, Rear-Adm. Philip Andrews. \$6,000. Charged with the education and supervision of line officers and of enlisted men.

Bureau of Ordnance.—Chief, Rear-Adm. N. C. Twining. \$8,000. Charged with supervision of the Torpedo Station, magazines on shore, and with the manufacture of explosives, arms and equipment.

Bureau of Construction and Repair.—Chief Constructor, Richard M. Watt. \$6,000. Charged with the design, construction, care, and repair of ships.

Bureau of Steam Engineering.—Engineer-in-Chief, Rear-Adm. Hutch I. Cone. \$6,000. Charged with designing, building and repairing steam machinery for naval ships.

Bureau of Supplies and Accounts.—Paymaster-Gen. Thomas J. Cowie. \$6,000. Charged with the supply of funds for disbursing officers, and the purchase of all naval supplies.

Bureau of Medicine and Surgery.—Surgeon-General, Charles F. Stokes. \$6,000. Control of naval hospitals and hospital ships.

Judge-Advocate-General.—Capt. Robert L. Russell. \$5,000. Charged with supervision of all legal aspects of the Navy Department. Solicitor, Henry M. Butler, \$4,000.

Marine Corps.—Commandant, Major-Gen. William P. Biddle. \$8,000.

DEPARTMENT OF THE INTERIOR

Secretary of the Interior.—Walter Lowrie Fisher, Ill.

Charged with patents, pensions, public lands and parks, education, Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Samuel Adams, Ill. \$6,000.

General Land Office.—Commissioner, Fred Dennett, N. D. \$5,000. Charged

with the survey, management and disposition of the public lands.

Patent Office.—Commissioner, Edward B. Moore, Mich. \$5,000. Administration of the patent laws, and supervision of the registration of trade-marks.

Pension Office.—Commissioner, James L. Davenport, D. C. \$5,000. Supervision of adjudication of claims arising under laws granting Army or Navy service pensions.

Bureau of Indian Affairs.—Commissioner, ———. \$5,000. Has charge of the Indian tribes of the United States (exclusive of Alaska).

Robert G. Valentine, Commissioner of Indian Affairs, resigned in 1912. His successor has not been appointed.

Bureau of Education.—Commissioner, Philander P. Claxton, Tenn. \$5,000. Collects statistics and general information regarding education; has charge of the schools for native Alaskan children; and administers the endowment fund for agricultural colleges and mechanical arts.

Geological Survey.—Director, George Otis Smith, Me. \$6,000. Charged with classification of the public lands and examination of the geologic structure, mineral resources, and the mineral products of the national domain.

Reclamation Service.—Director, Frederick H. Newell. \$7,500. Charged with the survey, construction, and operation of the reclamation and irrigation works in arid states, authorized by the act of June 17, 1902.

Bureau of Mines.—Director, Joseph A. Holmes, N. C. \$6,000. To promote the mining industry of the United States, foster the safety of miners, and give attention to the treatment of ores and the use of explosives.

DEPARTMENT OF AGRICULTURE

Secretary of Agriculture.—James Wilson, Iowa.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, national forest reserves, and interstate game laws,

Assistant Secretary.—Willett M. Hays, Minn. \$5,000.

Weather Bureau.—Chief, Willis L. Moore, Ill. \$6,000. Charged with forecasting of weather for the benefit of agriculture, commerce and navigation.

Bureau of Animal Industry.—Chief, A. D. Melvin, Ill. \$5,000. Conducts inspection of animals and meat food products; investigates communicable diseases and their prevention, and the breeding and feeding of animals.

Bureau of Plant Industry.—Chief, B. T. Galloway, Mo. \$5,000. Charged with the improvement of crops by breeding and selection, and the introduction of new plants and seeds to different parts of the United States.

Forest Service.—Chief, Henry S. Graves. \$5,000. Charged with the administration of the national forests, the investigation of forest problems and encouragement of protecting growing timber.

Bureau of Chemistry.—Chemist and Chief, Carl L. Alsberg. \$5,000. Charged with the analysis of agricultural products and fertilizers, and the investigation of the composition and adulteration of foods and drugs.

Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry, resigned March 15 (see XIX, *Agriculture*). His successor, Dr. Alsberg, appointed by direction of President Taft on Dec. 16, was formerly chemist in the Bureau of Plant Industry.

Bureau of Soils.—Chief, Milton Whitney, Md. \$3,500. Charged with investigating soils in their relations to climate and organic life.

Bureau of Entomology.—Chief, L. O. Howard, N. Y. \$4,000. Charged with dissemination of information regarding injurious insects affecting forests, crops and fruits, and means of their elimination.

Bureau of Biological Survey.—Chief, Henry W. Henshaw, Mass. \$3,000. Investigates the economic relations of animal life. Charged with enforcing the bird and game laws.

Office of Experiment Stations.—Director, A. C. True, Conn. \$4,000. Authorized to promote the interests of agricultural education and investigation.

Office of Public Roads.—Director, Logan W. Page, Mass. \$3,000. Charged with investigating road making, road maintenance and road materials, and collecting information regarding systems of road management.

DEPARTMENT OF COMMERCE AND LABOR

Secretary of Commerce and Labor.—Charles Nagel, Mo.

Charged with promoting commerce, mining, manufacturing, shipping, fisheries, transportation, and labor. Also the supervision of alien immigration, and naturalization.

Assistant Secretary.—Benjamin S. Cable, Ill. \$5,000.

Bureau of Corporations.—Commissioner, Luther Conant, Jr., N. Y. \$5,000. Authorized to investigate the organization and conduct of any corpora-

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tion or combination engaged in interstate or foreign commerce (except railroads).

Herbert Knox Smith, Commissioner of Corporations since 1907, resigned July 16. His successor, **Luther Conant, Jr.**, nominated July 17, was formerly Deputy Commissioner.

Bureau of Foreign and Domestic Commerce.—Chief, **Albertus H. Baldwin**, Conn. \$4,000. Charged with the collection and publication of statistics of foreign and domestic commerce, the development of manufactures and markets therefor, by the publication of information, and the investigation of matters affecting the commercial interests of the United States.

This bureau was established by Act of Congress in 1912 by the consolidation of the Bureau of Statistics and the Bureau of Manufactures. Mr. Baldwin, chief of bureau, was formerly chief of the Bureau of Manufactures. The assistant chiefs are **Oscar P. Austin**, former chief of the Bureau of Statistics, and **Etherd A. Brand**.

Bureau of Labor.—Commissioner, **Charles P. Neill**, D. C. \$5,000. Charged with matters pertaining to labor in its relations to capital, and the means of promoting prosperity among the laboring classes.

Bureau of Lighthouses.—Commissioner, **George R. Putnam**, Ia. \$5,000. Charged with the administrative duties relating to lighthouses and protective signals.

Steamboat Inspection Service.—Superintending Inspector-General, **George Uhler**, Penn. \$4,000. Charged with the inspection of vessels, the licensing of officers, and the administration of laws relating to steam vessels and their officers.

The Census Office.—Director, **E. Dana Durand**, Cal. \$7,000 during decennial census period, \$6,000 regular salary. The duty of the Census Office is to take, compile and publish the decennial censuses of the United States; the quinquennial censuses of agriculture and manufactures; the deaths in registration areas; the statistics of cotton ginned, and of cotton consumed; the annual statistics of cities; and to make such other statistical investigations as Congress may order.

Coast and Geodetic Survey.—Superintendent, **Otto H. Tittmann**, Mo. \$6,000. Charged with survey of coasts under the jurisdiction of the United States, and publication of charts covering these coasts.

Bureau of Fisheries.—Commissioner, **George M. Bowers**, W. Va. \$6,000. Charged with the propagation of useful food fishes, investigation of deep sea fishing grounds, and care of the

Alaskan salmon fisheries and the Pribilof Islands seal herds.

Bureau of Navigation.—Commissioner, **Eugene T. Chamberlain**, N. Y. \$4,000. Charged with superintendence of the commercial marine, issue of licenses, and collection of tonnage taxes.

Bureau of Immigration and Naturalization.—Commissioner-General, **Daniel J. Keefe**, Mich. \$5,000. Charged with administration of immigration and naturalization laws.

Bureau of Standards.—Director, **Samuel W. Stratton**, Ill. \$6,000. Charged with comparing and testing standards used in scientific investigations, commerce and educational institutions, with standards adopted or recognized by the Government.

Children's Bureau.—Chief, **Julia C. Lathrop**, Ill. \$5,000. Charged with the investigation of all matters pertaining to the welfare of children and child life.

This bureau was established by Act of Congress, approved April 9, 1912. Its first chief, appointed April 23, was formerly an associate of **Jane Addams** in Hull House, Chicago. (See XXVIII, *Prevention, Correction, and Charity*.)

INDEPENDENT BUREAUS AND INSTITUTIONS

Smithsonian Institution.—Secretary, **Charles D. Walcott**. \$7,500. Established 1846, under the terms of **James Smithson's** will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publication and lectures. Managed by a Board of Regents. It co-operates with the Government and national scientific bodies.

National Museum.—Under the same management. Charged with preserving and utilizing objects of art, ethnological collections, geological and mineralogical specimens belonging to the United States.

Pan-American Union.—Director-General, **John Barrett**, Ore. \$5,000. Established for the purpose of developing closer relations of commerce and friendship between the twenty-one republics of the Western Hemisphere.

Interstate Commerce Commission.—Seven members, each receiving an annual salary of \$10,000. **C. A. Prouty**, Vt., chairman; **J. C. Clements**, Ga., **F. K. Lane**, Cal., **E. E. Clark**, Ia., **J. S. Harlan**, Ill., **B. H. Meyer**, Wis., **C. C. McChord**, Ky. **John H. Marble**, D. C., Secretary: \$5,000. The regulating statutes apply to interstate traffic only. Traffic transported wholly within a single state is excepted.

Civil Service Commission.—Commis-

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sioners, J. C. Black, Ill., President, \$4,500; J. A. McIlhenny, La., \$4,000; W. S. Washburn, N. Y., \$4,000. Charged with the conduct of competitive examinations of applicants for the classified civil service.

Government Printing Office.—Public Printer, S. B. Donnelly, N. Y. \$5,500. Charged with the printing, press work, and binding of all Government publications of every description.

Isthmian Canal Commission.—Chairman and Chief Engineer, Col. George W. Goethals, assisted by five army officers as commissioners. \$15,000, inclusive of army pay. Secretary, Joseph Bucklin Bishop, N. Y. \$5,000. Charged with the construction of the Panama Canal.

The Library of Congress.—Librarian, Herbert Putnam, Mass. \$6,000. Primarily a reference library, composed of numerous collections, presented and bought. It is the third largest collec-

tion in the world. Under the jurisdiction of Congress.

Tariff Board.—Chairman, Henry C. Emery, Conn.; William M. Howard, Ga.; James B. Reynolds, Mass.; Alvin H. Sanders, Ill.; Thomas W. Page, Va.; Statistician, N. I. Stone, D. C.

The Tariff Board was abolished in 1912 through the failure of Congress to appropriate funds for its support (see XIV, *Public Finance*).

Commission of Fine Arts.—Established 1910, to pass upon sites and plans for future buildings, monuments, etc., in the District of Columbia. No compensation, but actual expenses allowed. Chairman, Daniel C. French, N. Y., sculptor; Vice-Chairman, Frederick Law Olmsted, Mass., landscape architect; Thomas Hastings, N. Y., architect; Cass Gilbert, N. Y., architect; Edwin H. Blashfield, N. Y., painter; Pierce Anderson, Ill.; Charles Moore, Mich.; Secretary, Spencer Cosby, D. C.

THE SIXTY-SECOND CONGRESS

The Senate.—A complete list of members of the Senate in the Sixty-second Congress was given in the *AMERICAN YEAR BOOK* for 1911 (pp. 203-4). The following changes occurred during the year:

The legislature of Arizona, admitted to statehood Feb. 14, on March 26 elected to the U. S. Senate Marcus A. Smith and Henry F. Ashurst, both Democrats, who took their seats April 2. On the same day were admitted Albert B. Fall and Thomas B. Catron, both Republicans, elected March 27 by the legislature of New Mexico, admitted to statehood Jan. 6. The Senate lost by death during the year: Robt. L. Taylor (Dem.), of Tennessee, March 31, succeeded by Newell Sanders (Rep.), appointed April 8; George S. Nixon (Rep.), of Nevada, June 5, succeeded by W. A. Massey (Rep.); Weldon B. Heyburn (Rep.), of Idaho, Oct. 17, succeeded by K. I. Perky (Dem.), appointed Nov. 16; and Isidor Rayner (Dem.), of Maryland, Nov. 25, succeeded by Wm. H. Jackson (Rep.). Jeff Davis (Dem.), of Arkansas, died Jan. 2, 1913. The election of William Lorimer (Rep.), of Illinois, was declared invalid July 13 (see I, *American History*). Vacancies exist in Arkansas, Colorado, and Illinois.

The organization of the principal committees was given in the *AMERICAN YEAR BOOK*, 1911 (p. 202).

The House of Representatives.—A complete list of members of the House of Representatives in the Sixty-second Congress was given in the *AMERICAN YEAR BOOK* for 1911 (pp. 204-8). The following changes occurred during the year:

Two representatives from New Mexico, George Curry (Rep.) and H. B. Ferguson (Dem.), were seated Jan. 8. Carl Hayden (Dem.), representative-at-large from Arizona, was seated in February. The House lost by death during the year: David J. Foster (Rep.), of Vermont, March 21, succeeded by Frank L. Green (Rep.), elected July 30; Henry H. Bingham (Rep.), of Pennsylvania, March 23, succeeded by Wm. S. Vare; Elbert H. Hubbard (Rep.), of Iowa, June 4, succeeded by George C. Scott (Rep.); Robert C. Wickliffe (Dem.), of Louisiana, June 11, succeeded by L. L. Morgan (Dem.); George R. Malby (Rep.), of New York, July 5, succeeded by Edwin A. Merritt (Rep.); Carl C. Anderson (Dem.), of Ohio, Oct. 1; Richard E. Connell (Dem.), of New York, Oct. 30; George H. Utter (Rep.), of Rhode Island, Nov. 3; and John G. McHenry (Dem.), of Pennsylvania, Dec. 27. The election of Theron F. Catlin (Rep.), of Missouri, was invalidated Aug. 12, and Patrick F. Gill (Dem.) was seated in his stead; Charles C. Bowman (Rep.), of Pennsylvania,

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was unseated Dec. 12. William Sulzer (Dem.), elected governor of New York, resigned Dec. 31. Vacancies occur in New York (2), Pennsylvania (2), Ohio, and Rhode Island.

The organization of the House committees was given in the **AMERICAN YEAR BOOK** for 1911 (pp. 200-2).

Second Session.—The second (first regular) session, Sixty-second Congress, which began Dec. 4, 1911, and

ended Aug. 26, 1912, was one of the longest in the history of the country. The total appropriations authorized for the fiscal year ending June 30, 1913, amounted to \$1,019,636,143.66 (see XIV, *Public Finances*). The appropriations outside of permanent appropriations, appropriations for the Panama Canal, etc., by classes of expenditures, for the five years 1909-13, are given in the following table:

ANNUAL APPROPRIATIONS OF CONGRESS, 1909-13

APPROPRIATED	1st session 60th Con- gress 1909	2d session 60th Con- gress 1910	1st and 2d sessions, 61st Congress, 1911	3d session 61st Congress, 1912	1st and 2d ses- sions, 62d Con- gress, 1913
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
To supply deficiencies.	42,662,723	18,913,555	23,045,612	10,028,526.84	8,505,587.25
Legislative, executive, and judicial expenses.	32,832,913	32,007,049	34,158,767	35,378,149.85	34,245,356.75
Sundry civil expenses.	94,115,143	117,842,109	106,015,198	135,241,935.34	102,538,934.40
The army.	95,382,247	101,195,883	95,440,567	93,374,755.97	90,958,712.98
The naval service.	122,662,485	136,935,199	131,410,568	126,405,509.24	123,151,538.76
The Indian service.	9,253,347	11,854,982	9,266,528	8,842,136.37	8,920,970.66
Rivers and harbors.	18,092,945	29,190,264	49,380,541	30,883,419.00	40,559,620.50
Forts and fortifications	9,316,745	8,170,111	5,617,200	5,473,707.00	4,036,235.00
Military Academy.	845,634	2,531,521	1,856,249	1,163,424.07	1,064,668.26
Post Office Departm't				Indefinite	Indefinite
Pensions.	163,053,000	160,908,000	155,758,000	153,682,000.00	165,146,145.84
Consular and diplomati- c service.	3,538,852	3,613,861	4,116,081	3,988,516.41	3,638,047.41
Department of Agricul- ture.	11,672,106	12,995,036	13,487,636	16,900,016.00	16,648,168.00
District of Columbia.	10,001,888	10,699,531	10,608,045	12,056,786.50	10,675,833.50
Reclamation fund.			20,020,000		
Miscellaneous.	14,086,212	1,327,176	3,544,798	1,130,678.81	7,292,359.03
Total.	627,516,240	648,191,676	663,725,790	634,549,561.40	617,382,178.34

The number of bills and resolutions introduced was 35,683, of which the House was responsible for 27,589; approximately 350 measures of public interest became law. The important legislation enacted included:

The Panama Canal bill, governing the operation of the Canal and the government of the Zone. (See X, *The Panama Canal*, and XXII, *Trade, Transportation and Communication*.)

A Pension bill, increasing the expenditures on account of pensions to Civil War veterans over \$25,000,000 annually. (See XII, *Pensions*.)

A bill limiting the work of laborers and mechanics employed on Government work to eight hours a day. (See XVII, *Labor Legislation*.)

A bill creating a Children's Bureau in the Department of Commerce and Labor. (See XVIII, *Prevention, Correction, and Charity*.)

A Constitutional amendment providing for the election of U. S. Senators by direct vote. (See II, *Popular Government and Current Politics*.)

A bill for the federal regulation of radio-telegraphy. (See I, *The "Titanic" Disaster*.)

A bill regulating the wireless apparatus of steamers on the ocean and the Great Lakes. (*Ibid.*)

A bill providing a form of civil government for the territory of Alaska. (See VIII, *Territories and Dependencies*.)

A bill creating a committee to inquire into the subject of industrial relations. (See XVII, *Labor Legislation*.)

A bill reducing from five to three years the period of residence required on homestead lands before patents are issued. (See X, *Public Lands*.)

A resolution of the House of Representatives calling for an inquiry into the so-called "Money Trust." (See XIV, *Banking and Currency*.)

A resolution of the House of Representatives, calling for an inquiry into the so-called "shipping trust." (See XIII, *Economic Conditions*.)

A resolution of the House of Representatives, directing the Secretary of Commerce and Labor to investigate the

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causes of the recent increase in the price of anthracite coal.

Important legislation which failed of enactment included:

A bill providing for the physical valuation of railroads.

An employers' liability and workmen's compensation bill. (See XVII, *Labor Legislation*.)

A bill amending the law with respect to the issuance of restraining orders in labor disputes. (*Ibid.*)

A bill creating as a division of the United States Government a Department of Labor.

An immigration bill, containing an educational test. (See XV, *Immigration*.)

The Clayton bill, providing for a trial by jury in all proceedings of indirect contempt of court.

A bill imposing an excise tax of 1 per cent. on the net income, including salaries over \$5,000 a year, of persons, firms and co-partnerships. (See XIV, *Public Finance*.)

A bill providing for the issuance of a uniform bill of lading by railroads. (See XIII, *Economic Conditions*.)

A bill prohibiting dealings in cotton "futures." (*Ibid.*)

A bill prohibiting dealings in grain "futures." (*Ibid.*)

A bill providing for the publicity of contributions and expenditures for the purpose of influencing or securing the nomination of candidates for the offices of President or Vice-President.

A resolution limiting the tenure of office of the President of the United States to a single term of six years.

Bills revising the chemical, cotton, and sugar schedules of the tariff. (See XIV, *Public Finance*.)

AMENDMENTS TO THE FEDERAL CONSTITUTION

Income Tax.—The income-tax amendment was ratified during the year by four states, Arizona, Minnesota, South Dakota, and Louisiana, bringing the total number to 34. (See XIV, *Public Finance*.)

Direct Election of Senators.—In 1912 an amendment providing for the direct election of U. S. Senators was passed by Congress and submitted to the states. (See II, *Popular Government and Current Politics*.)

Limitation of Presidential Term.—On Feb. 13 Senator Works, of California, introduced a resolution proposing an amendment to the Constitution limiting the Presidential tenure to one term of six years, which was reported favorably on May 21. A similar resolution was offered in the House, but no action was taken up to the close of the year.

Method of Amendment.—On Aug. 6 Senator La Follette, of Wisconsin, introduced a resolution proposing an amendment to the Constitution, making the method of amendment more simple and expeditious and modifying the requirements for adoption. No action was taken up to the close of the year. (See I, *American History*.)

Direct Election of President and Vice-President.—Senator Works, of California, on Dec. 3, introduced an

amendment providing for the abolition of the Electoral College and the direct election of the President and Vice-President. No action was taken up to the close of the year.

Initiative and Referendum.—Senator Bristow, of Kansas, on Dec. 4, introduced a proposed amendment permitting the President to submit to popular vote at a Congressional election any measure he has recommended to Congress and upon which no action has been taken for six months. No action was taken up to the close of the year.

The Recall of Judicial Decisions.—On the same day, Senator Bristow introduced another proposed amendment providing that:

If the Supreme Court shall decide a law enacted by Congress is in violation of the provisions of the Constitution of the United States, the Congress at a regular session held after such decision may submit the act to the electors at a regular Congressional election.

No action was taken on this amendment up to the close of the year.

Under each of the amendments introduced by Senator Bristow, it is proposed that the questions submitted to the people must have a majority of the popular vote in a majority of the states, as well as in a majority of the congressional districts of the nation.

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THE SIXTY-THIRD CONGRESS

The first House of Representatives of representatives to the various under the new apportionment was states under each census has been as elected Nov. 5. The apportionment follows:

REPRESENTATIVES UNDER EACH APPOINTMENT

STATES	Constitutional apportionment	First census, 1790	Second census, 1800	Third census, 1810	Fourth census, 1820	Fifth census, 1830	Sixth census, 1840	Seventh census, 1850	Eighth census, 1860	Ninth census, 1870	Tenth census, 1880	Eleventh census, 1890	Twelfth census, 1900	Thirteenth cen- sus, 1910
Alabama	.....	.....	.....	1	3	5	7	7	6	8	8	9	9	10
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Arkansas	.....	.....	.....	.....	.....	1	1	2	3	4	5	6	7	7
California	.....	.....	.....	.....	.....	.....	2	2	3	4	6	8	8	11
Colorado	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	3	4
Connecticut	5	7	7	7	6	6	4	4	4	4	4	4	5	5
Delaware	1	1	1	2	1	1	1	1	1	1	1	1	1	1
Florida	.....	.....	.....	.....	.....	.....	1	1	1	2	2	2	3	4
Georgia	3	2	4	6	7	9	8	8	7	9	10	11	11	12
Idaho	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	2
Illinois	.....	.....	.....	1	1	3	7	9	14	19	20	22	25	27
Indiana	.....	.....	.....	1	3	7	10	11	11	13	13	13	13	13
Iowa	.....	.....	.....	.....	.....	.....	2	2	6	9	11	11	11	11
Kansas	.....	.....	.....	.....	.....	.....	.....	.....	1	3	7	8	8	8
Kentucky	.....	2	6	10	12	13	10	10	9	10	11	11	11	11
Louisiana	.....	.....	.....	1	3	3	4	4	5	6	6	6	7	8
Maine	.....	.....	.....	7	7	8	7	6	5	6	6	6	4	4
Maryland	6	8	9	9	9	8	6	6	5	6	6	6	6	6
Massachusetts	8	14	17	13	13	12	10	11	10	11	12	13	14	16
Michigan	.....	.....	.....	.....	.....	1	3	4	6	9	11	12	12	13
Minnesota	.....	.....	.....	.....	.....	.....	.....	.....	2	2	3	5	7	9
Mississippi	.....	.....	.....	1	1	2	4	5	5	6	7	7	8	8
Missouri	.....	.....	.....	.....	1	2	5	7	9	13	14	15	16	16
Montana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	2
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	1	1	3	6	6	6
Nevada	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	1	1
New Hampshire	3	4	5	6	6	5	4	3	3	3	2	2	2	2
New Jersey	4	5	6	6	6	6	5	5	5	7	7	8	10	12
New Mexico	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
New York	6	10	17	27	34	40	34	33	31	33	34	34	37	43
North Carolina	5	10	12	13	13	13	9	8	7	8	9	9	10	10
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	3
Ohio	.....	.....	1	6	14	19	21	21	19	20	21	21	21	22
Oklahoma	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	8
Oregon	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	2	2	3
Pennsylvania	8	13	18	23	26	28	24	25	24	27	28	30	32	36
Rhode Island	1	2	2	2	2	2	2	2	2	2	2	2	2	3
South Carolina	5	6	8	9	9	9	7	6	4	5	7	7	7	7
South Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	2	3
Tennessee	.....	1	3	6	9	13	11	10	8	10	10	10	10	10
Texas	.....	.....	.....	.....	.....	.....	2	2	4	6	11	13	16	18
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Vermont	.....	2	4	6	5	5	4	3	3	3	2	2	2	2
Virginia	10	19	22	23	22	21	15	13	11	9	10	10	10	10
Washington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	3	5
West Virginia	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	4	4	5	6
Wisconsin	.....	.....	.....	.....	.....	.....	2	3	6	8	9	10	11	11
Wyoming	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	1
Total	65	106	142	186	213	242	232	237	243	293	332	357	391	435

The following representation was added after the several census apportionments indicated and is included in the above table: First—Tennessee, 1. Second—Ohio, 1. Third—Alabama, 1; Illinois, 1; Indiana, 1; Louisiana, 1; Maine, 7; Mississippi, 1. Fifth—Arkansas, 1; Michigan, 1. Sixth—California, 2; Florida, 1; Iowa, 2; Texas, 2; Wisconsin, 2. Seventh—Massachusetts, 1; Minnesota, 2; Oregon, 1. Eighth—Illinois, 1; Iowa, 1; Kentucky, 1; Minnesota, 1; Nebraska, 1; Nevada, 1; Ohio, 1; Pennsylvania, 1; Rhode Island, 1; Vermont, 1. Ninth—Alabama, 1; Colorado, 1; Florida, 1; Indiana, 1; Louisiana, 1; New Hampshire, 1; New York, 1; Pennsylvania, 1; Tennessee, 1; Vermont, 1. Tenth—Idaho, 1; Montana, 1; North Dakota, 1; South Dakota, 2; Washington, 1; Wyoming, 1. Eleventh—Utah, 1. Twelfth—Oklahoma, 5. Thirteenth—Arizona, 1; New Mexico, 1.

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The Senate.—The terms of 32 Senators, including Senator Albert B. Fall, elected from New Mexico in 1912, expire March 3, 1913. The members of the Senate in the Sixty-third Congress, according to the best information available at the end of the year, will be as follows:

THE SENATE

Senators are elected by the state legislatures for a term of six years. Salary, \$7,500 per year and mileage. Democrats in Roman, 49; Republicans in italics, 45; in doubt, 2. Those marked * chosen in primary.

ALABAMA Term expires: 1915. Jos. F. Johnston. 1919. J. H. Bankhead	KENTUCKY Term expires: 1915. Wm. O. Bradley 1919. Ollie M. James	NEW MEXICO Term expires: 1915. <i>Thomas B. Catron</i> 1919. <i>A. B. Fall</i>
ARIZONA 1915. Marcus A. Smith 1917. Henry F. Ashurst	LOUISIANA 1915. John R. Thornton 1919. Jos. E. Ransdell *	NEW YORK 1915. <i>Elhu Root</i> 1917. Jas. A. O'Gorman
ARKANSAS 1915. James P. Clarke 1919. A Democrat	MAINE 1917. Charles F. Johnson 1919. <i>A Republican</i>	NORTH CAROLINA 1915. Lee S. Overman 1919. F. M. Simmons *
CALIFORNIA 1915. <i>George O. Perkins</i> 1917. <i>John D. Works</i>	MARYLAND 1915. John W. Smith 1917. <i>William P. Jackson</i>	NORTH DAKOTA 1915. <i>Alex J. Gronna</i> 1917. <i>P. J. McCumber</i>
COLORADO 1915. Chas. S. Thomas * 1919. John F. Shafroth *	MASSACHUSETTS 1917. <i>Henry Cabot Lodge</i> 1919. <i>A Republican</i>	OHIO 1915. <i>Theo. E. Burton</i> 1917. Atlee Pomerene
CONNECTICUT 1915. <i>Frank B. Brandegee</i> 1917. <i>George P. McLean</i>	MICHIGAN 1917. <i>Chas. E. Townsend</i> 1919. <i>Wm. Alden Smith</i> *	OKLAHOMA 1915. Thomas P. Gore 1919. R. L. Owen *
DELAWARE 1917. <i>Henry A. du Pont</i> 1919. A Democrat	MINNESOTA 1917. <i>Moses Edwin Clapp</i> 1919. <i>Knute Nelson</i> *	OREGON 1915. G. E. Chamberlain 1919. Harry Lane *
FLORIDA 1915. Duncan U. Fletcher 1917. Nathan P. Bryan	MISSISSIPPI 1917. John S. Williams 1919. Jas. K. Vardaman *	PENNSYLVANIA 1915. <i>Boies Penrose</i> 1917. <i>George T. Oliver</i>
GEORGIA 1915. Hoke Smith 1919. A. O. Bacon *	MISSOURI 1915. William J. Stone 1917. James A. Reed	RHODE ISLAND 1917. <i>Henry F. Lipitt</i> 1919. <i>A Republican</i>
IDAHO 1915. <i>A Republican</i> 1919. <i>W. E. Borah</i> *	MONTANA 1917. Henry L. Myers 1919. T. J. Walsh *	SOUTH CAROLINA 1915. Ellison D. Smith 1919. B. R. Tillman *
ILLINOIS 1915. In doubt 1919. In doubt	NEBRASKA 1917. G. M. Hitchcock 1919. <i>Geo. W. Norris</i> *	SOUTH DAKOTA 1915. <i>Coe I. Crawford</i> 1919. <i>A Republican</i>
INDIANA 1915. Ben. F. Shively 1917. John W. Kern	NEVADA 1915. F. G. Newlands 1919. Key Pittman *	TENNESSEE 1917. Luke Lea 1919. A Democrat
IOWA 1915. <i>A. B. Cummins</i> 1919. <i>W. S. Kenyon</i> *	NEW HAMPSHIRE 1915. <i>Jacob H. Gallinger</i> 1919. <i>A Republican</i>	TEXAS 1917. Chas. A. Culberson 1919. Morris Sheppard *
KANSAS 1915. <i>Joseph L. Bristow</i> 1919. W. H. Thompson *	NEW JERSEY 1917. James E. Martine 1919. Wm. Hughes *	UTAH 1915. <i>Reed Smoot</i> 1917. <i>Geo. Sutherland</i>

V. THE NATIONAL ADMINISTRATION

VERMONT	WASHINGTON	WISCONSIN
Term expires:	Term expires:	Term expires:
1915. <i>Wm. P. Dillingham</i>	1915. <i>Wesley L. Jones</i>	1915. <i>Isaac Stephenson</i>
1917. <i>Carroll S. Page</i>	1917. <i>Miles Poindexter</i>	1917. <i>B. M. La Follette</i>
VIRGINIA	WEST VIRGINIA	WYOMING
1917. <i>Claude A. Swanson</i>	1917. <i>Wm. E. Chilton</i>	1917. <i>Clarence D. Clark</i>
1919. <i>Thos. S. Martin</i>	1919. <i>A Republican</i>	1919. <i>F. B. Warren</i>

House of Representatives.—The following list of members of the House of Representatives in the Sixty-third Congress is based on an unofficial list issued by the Clerk of the House of Representatives from returns available up to Dec. 7, and is substantially correct.

HOUSE OF REPRESENTATIVES

Democrats in Roman, 291; Republicans in *italics*, 144. Those marked * served in the Sixty-second Congress. Whole number, 485.

ALABAMA			4. Jeremiah Donovan	18. Frank T. O'Hair
1. George W. Taylor *			5. Wm. Kennedy	19. Chas. M. Borchers
2. S. H. Dent, Jr. *			DELAWARE	
3. H. D. Clayton *			AT LARGE—F. Brockson	
4. F. L. Blackmon *			FLORIDA	
5. J. T. Heffin *			1. S. M. Sparkman *	22. W. N. Balts
6. R. P. Hobson *			2. Frank Clark *	23. M. D. Foster *
7. J. L. Burnett *			3. Emmett Wilson	24. H. R. Fowler *
8. William Richardson *			AT LARGE—Claude L'Engle	
9. O. W. Underwood *			INDIANA	
AT LARGE—John W. Abercrombie			1. Chas. Lieb	
ARIZONA			2. W. A. Cullop *	
AT LARGE—Carl Hayden *			3. W. E. Cox *	
ARKANSAS			4. Lincoln Dixon *	
1. T. H. Caraway			5. R. W. Moss *	
2. W. A. Oldfield *			6. F. H. Gray *	
3. J. C. Floyd *			7. C. A. Korbly *	
4. O. T. Wingo			8. J. A. M. Adair *	
5. H. M. Jacoway *			9. M. A. Morrison *	
6. S. M. Taylor			10. J. B. Peterson	
7. W. S. Goodwin *			11. G. W. Rauch *	
CALIFORNIA			12. C. Cline *	
1. Wm. Kent			13. H. A. Barnhart *	
2. J. E. Raker *			IOWA	
3. Chas. F. Curry			1. O. A. Kennedy *	
4. Julius Kahn *			2. I. S. Pepper *	
5. J. I. Nolan			3. Maurice Connolly	
6. Jos. R. Knowland *			4. G. N. Haugen *	
7. D. S. Church			5. J. W. Good *	
8. Eweris A. Hayes *			6. S. Kirkpatrick	
9. O. W. Bell			7. S. F. Prouty *	
10. Wm. D. Stephens *			8. H. M. Townner *	
11. William Kettner			9. W. R. Green *	
COLORADO			10. F. P. Woods *	
1. George Kindel			11. George O. Scott	
2. H. H. Seldomridge			KANSAS	
AT LARGE—E. T. Taylor *			1. D. R. Anthony, Jr. *	
Edw. Keating			2. Joseph Taggart *	
CONNECTICUT			3. P. P. Campbell *	
1. Augustine Lonergan			4. Dudley Doolittle	
2. B. F. Mahan			5. G. T. Helvering	
3. Thomas L. Reilly *			6. J. R. Connelly	
			7. Geo. A. Neeley *	
			8. Victor Murdock *	

V. THE NATIONAL ADMINISTRATION

KENTUCKY

1. A. W. Barkley
2. A. O. Stanley *
3. R. Y. Thomas, Jr. *
4. Ben Johnson *
5. Swagar Sherley *
6. A. B. Rouse *
7. J. C. Cantrill *
8. Harvey Helm *
9. W. J. Fields *
10. J. W. Langley *
11. Caleb Powers *

LOUISIANA

1. Albert Estopinal *
2. H. Garland Dupré *
3. R. F. Broussard *
4. J. T. Watkins *
5. J. W. Elder
6. L. L. Morgan
7. L. Lazaro
8. J. B. Aswell

MAINE

1. A. O. Hinds *
2. D. J. McGillicuddy *
3. Forrest Goodwin
4. F. E. Guernsey *

MARYLAND

1. J. Harry Covington *
2. J. F. C. Talbott *
3. George König *
4. J. Chas. Linthicum *
5. Frank O. Smith
6. D. J. Lewis *

MASSACHUSETTS

1. Allen T. Treadway
2. F. H. Gillette *
3. W. H. Wilder *
4. S. E. Winslow
5. John J. Rogers
6. A. P. Gardner *
7. M. F. Phelen
8. F. S. Deltrich
9. E. W. Roberts *
10. W. F. Murray *
11. A. J. Peters *
12. J. M. Curley *
13. J. W. Weeks *
14. Edward Gilmore
15. W. S. Greene *
16. Thos. C. Thatcher

MICHIGAN

1. Frank E. Doremus *
 2. Samuel W. Beakes
 3. J. M. C. Smith
 4. E. L. Hamilton *
 5. C. E. Mapes
 6. S. W. Smith *
 7. L. C. Crampton
 8. J. W. Fordney *
 9. J. C. McLaughlin *
 10. R. O. Woodruff
 11. F. O. Lindquist
 12. W. J. McDonald
- AT LARGE—P. H. Kelley

MINNESOTA

1. S. Anderson *
 2. W. S. Hammond *
 3. C. R. Davis *
 4. F. O. Stevens *
 5. Geo. R. Smith
 6. C. A. Lindbergh *
 7. A. J. Volstead *
 8. O. B. Miller *
 9. H. Steenerson *
- AT LARGE—Jas. Manahan

MISSISSIPPI

1. E. S. Candler, Jr. *
2. H. D. Stephens *
3. B. G. Humphreys *
4. T. U. Sisson *
5. S. A. Witherspoon *
6. B. P. Harrison *
7. P. E. Quin
8. J. W. Collier *

MISSOURI

1. J. T. Lloyd *
2. W. W. Rucker *
3. J. W. Alexander *
4. C. F. Booher *
5. W. P. Borland *
6. C. C. Dickinson *
7. C. W. Hamlin *
8. D. W. Shackelford *
9. Champ Clark *
10. Richard Bartholdt *
11. W. L. Igoe
12. L. C. Dyer *
13. W. L. Hensley *
14. J. J. Russell *
15. P. D. Decker
16. T. L. Rubey *

MONTANA

- AT LARGE—Thomas Stout
John M. Evans

NEBRASKA

1. J. A. Maguire *
2. C. O. Lobeck *
3. D. V. Stephens *
4. C. H. Sloan *
5. S. R. Barton
6. M. P. Kinkaid *

NEVADA

- AT LARGE—E. E. Roberts *

NEW HAMPSHIRE

1. E. E. Reed
2. R. B. Stevens

NEW JERSEY

1. Wm. J. Browning *
2. J. Thompson Baker
3. Thos. J. Scully *
4. A. B. Walsh
5. Wm. E. Tuttle, Jr. *
6. L. J. Martin
7. R. G. Bremner
8. E. F. Kinkead *

9. W. I. McCoy *
10. E. W. Townsend *
11. J. J. Egan
12. J. A. Hamill *

NEW MEXICO

- AT LARGE—H. B. Ferguson *

NEW YORK

1. Lathrop Brown
2. D. J. O'Leary
3. F. E. Wilson *
4. H. H. Dale
5. J. P. Maher *
6. W. M. Calder *
7. J. J. Fitzgerald *
8. D. J. Griffin
9. J. H. O'Brien
10. H. A. Metz
11. D. J. Riordan *
12. H. M. Goldfogle *
13. T. D. Sullivan
14. J. M. Levy *
15. M. F. Conry *
16. F. J. Dooling
17. J. F. Carew
18. Thos. S. Patten *
19. W. M. Chandler
20. F. B. Harrison *
21. Henry George, Jr. *
22. Henry Bruckner
23. J. A. Goulden
24. W. S. Oglesby
25. B. I. Taylor
26. Edmund Platt
27. George McClellan
28. P. G. Ten Eyck
29. James S. Parker
30. Samuel Wallin
31. E. A. Merritt, Jr.
32. Luther Mott *
33. C. A. Talcott *
34. Geo. W. Fairchild *
35. John R. Clancy
36. Sereno E. Payne *
37. Edwin S. Underhill *
38. Thos. B. Dunn
39. H. G. Danforth *
40. Robt. H. Gittins
41. Chas. B. Smith *
42. D. A. Driscoll *
43. O. M. Hamilton

NORTH CAROLINA

1. J. H. Small *
2. Claude Kitchin *
3. J. M. Faison *
4. E. W. Pou *
5. C. M. Stedman *
6. H. L. Godwin *
7. R. N. Page *
8. R. L. Doughton *
9. E. Y. Webb *
10. J. M. Gudger, Jr. *

NORTH DAKOTA

1. H. T. Helgesen *
2. Geo. M. Young
3. P. D. Norton

V. THE NATIONAL ADMINISTRATION

OHIO

1. S. Bowdle
 2. A. G. Allen *
 3. Warren Gard
 4. J. H. Goeke *
 5. T. T. Ansberry *
 6. S. D. Fess
 7. J. D. Post *
 8. F. B. Wills *
 9. I. R. Sherwood *
 10. R. Switzer *
 11. H. C. Claypool *
 12. C. L. Brumbaugh
 13. John A. Key
 14. W. G. Sharpe *
 15. George White *
 16. W. B. Francis *
 17. W. A. Ashbrook *
 18. J. J. Whitacre *
 19. E. R. Bathrick *
 20. Wm. Gordon
 21. R. J. Bulkley *
- AT LARGE—Robert Crosser

OKLAHOMA

1. B. S. McGuire *
 2. Dick T. Morgan *
 3. J. S. Davenport *
 4. C. D. Carter *
 5. Scott Ferris *
- AT LARGE—W. H. Murray
Claude Weaver
J. B. Thompson

OREGON

1. W. O. Hawley *
2. N. J. Sinnott
3. A. W. Lafferty *

PENNSYLVANIA

1. W. S. Vare *
2. G. S. Graham
3. J. H. Moore *
4. G. W. Edmonds
5. Michael Donohoe *
6. J. W. Logue
7. T. S. Butler *
8. R. E. Diefenderfer *
9. W. W. Griest *
10. J. B. Farr *
11. J. J. Casey
12. R. E. Lee *
13. J. H. Rothermel *
14. W. D. B. Ainsy *
15. B. R. Kiss
16. John V. Leshar
17. F. L. Deraham
18. A. S. Kreider
19. W. W. Bailey
20. A. R. Brodbeck

21. O. E. Patton *
 22. A. L. Keister
 23. W. N. Carr
 24. H. W. Temple
 25. M. W. Shreve
 26. A. M. Palmer *
 27. J. N. Langham *
 28. W. J. Hulings
 29. S. G. Porter *
 30. M. O. Kelly
 31. J. F. Burke *
 32. A. J. Barchfeld *
- AT LARGE—A. R. Rupley
J. M. Morin
A. H. Walters
F. E. Lewis

RHODE ISLAND

1. G. F. O'Shaunessy *
2. Peter G. Gerry
3. Ambrose Kennedy

SOUTH CAROLINA

1. G. S. Legare *
2. J. F. Byrnes *
3. Wyatt Aiken *
4. J. T. Johnson *
5. D. E. Finley *
6. J. W. Ragsdale
7. A. F. Lever *

SOUTH DAKOTA

1. O. H. Dillon
2. O. H. Burke *
3. E. W. Martin *

TENNESSEE

1. Sam R. Sells *
2. R. W. Austin *
3. J. A. Moon *
4. Cordell Hull *
5. W. C. Houston *
6. J. W. Byrns *
7. L. P. Padgett *
8. T. W. Sims *
9. F. J. Garrett *
10. D. K. McKellar *

TEXAS

1. H. W. Vaughn
2. Martin Dies *
3. James Young *
4. Sam Rayburn
5. Jack Beall *
6. Rufus Hardy *
7. A. W. Gregg *
8. J. H. Eagle
9. G. F. Burgess *
10. A. S. Burleson *

11. R. L. Henry *
 12. Oscar Calloway *
 13. J. H. Stephens *
 14. J. L. Slayden *
 15. J. N. Garner *
 16. W. R. Smith *
- AT LARGE—H. W. Sumners
D. E. Garrett

UTAH

- AT LARGE—Joseph Howell *
Jacob Johnson

VERMONT

1. Frank L. Greene *
2. Frank Plumley *

VIRGINIA

1. W. A. Jones *
2. E. E. Holland *
3. A. J. Montague
4. W. A. Watson
5. E. W. Saunders *
6. Carter Glass *
7. James Hay *
8. C. C. Carlin *
9. C. B. Slomp *
10. H. D. Flood *

WASHINGTON

1. W. E. Humphrey *
 2. A. Johnson
 3. W. L. La Follette *
- AT LARGE—J. A. Falconer
J. W. Bryan

WEST VIRGINIA

1. J. W. Davis *
 2. W. G. Brown, Jr. *
 3. S. V. Arts
 4. H. H. Moss, Jr.
 5. J. A. Hughes *
- AT LARGE—H. Sutherland

WISCONSIN

1. H. A. Cooper *
2. M. E. Burke *
3. J. M. Nelson *
4. W. J. Cary *
5. W. H. Stafford
6. M. K. Reilly
7. J. J. Esch *
8. E. E. Browne
9. T. F. Konop *
10. James A. Frear
11. I. L. Lenroot *

WYOMING

1. F. W. Mondell *

THE FEDERAL JUDICIARY

The United States Supreme Court. 1911, was filled March 18 when Mah—The vacancy in the Supreme Court lon Pitney took the oath of office; caused by the death of Associate the nomination was made by Presi—Justice John M. Harlan on Oct. 14, dent Taft Feb. 19 and confirmed by

the Senate March 13. Justice Pitney was born at Morristown, N. J., Feb. 5, 1858, and was admitted to the New Jersey bar in 1882. He sat in Congress from 1895 to 1899, and in the Senate of New Jersey from 1899 to 1901. On Feb. 5, 1901, Justice Pitney was appointed associate justice of the Supreme Court of New Jersey for a term of seven years. He was appointed chancellor of New Jersey on Jan. 23, 1908; from this office he resigned on his appointment to the Supreme Court.

Supreme Court justices are appointed for life and receive salaries of \$12,500 per year, except the Chief Justice, whose salary is \$13,000. The justices of the Supreme Court are:

UNITED STATES SUPREME COURT

Born. App.

Edward D. White, of Louisiana, Chief Justice	1845	1894
Joseph McKenna, of California	1843	1898
Oliver W. Holmes, of Mass.	1841	1902
William R. Day, of Ohio	1849	1903
Horace H. Lurton, of Tenn.	1844	1909
Charles E. Hughes, of New York	1862	1910
Willis Van Devanter, of Wyo.	1859	1910
Joseph Rucker Lamar, of Ky.	1857	1910
Mahlon Pitney, of New Jersey	1858	1912
Clerk, J. H. McKenney, D. C.		\$6,000.
Marshal, J. M. Wright, Kentucky.		\$3,500.
Reporter, Chas. H. Butler, New York.		\$4,500.

United States Circuit Courts.—

The federal circuit courts were abolished Jan. 1, 1912, by the act of March 3, 1911, their jurisdiction being transferred to the district courts (see IX, *Law and Jurisprudence*). The former circuit court judges now sit in the circuit courts of appeals. The salary of circuit judges is \$7,000.

United States Circuit Courts of Appeals.—The act of March 3, 1911 (see IX, *Law and Jurisprudence*), provides that there shall be in each circuit a circuit court of appeals, which shall consist of three judges, two of whom shall constitute a quorum; the chief justice and the associate justices of the Supreme Court assigned to each circuit, and the several district judges within each circuit, shall be competent to sit

as judges of the circuit court of appeals within their respective circuits.

The nine circuits into which the United States is divided, with the Supreme Court justice assigned to each in March, 1912, are as follows:

First Judicial Circuit.—Mr. Justice Holmes. Districts of Maine, New Hampshire, Massachusetts, and Rhode Island.

Second Judicial Circuit.—Mr. Justice Hughes. Districts of Vermont, Connecticut, Northern New York, Southern New York, Eastern New York, and Western New York.

Third Judicial Circuit.—Mr. Justice Pitney. Districts of New Jersey, Eastern Pennsylvania, Middle Pennsylvania, Western Pennsylvania, and Delaware.

Fourth Judicial Circuit.—Mr. Chief Justice White. Districts of Maryland, Northern West Virginia, Southern West Virginia, Eastern Virginia, Western Virginia, Eastern North Carolina, Western North Carolina, and South Carolina.

Fifth Judicial Circuit.—Mr. Justice Lamar. Districts of Northern Georgia, Southern Georgia, Northern Florida, Southern Florida, Northern Alabama, Middle Alabama, Southern Alabama, Northern Mississippi, Southern Mississippi, Eastern Louisiana, Western Louisiana, Northern Texas, Southern Texas, Eastern Texas, and Western Texas.

Sixth Judicial Circuit.—Mr. Justice Day. Districts of Northern Ohio, Southern Ohio, Eastern Michigan, Western Michigan, Eastern Kentucky, Western Kentucky, Eastern Tennessee, Middle Tennessee, and Western Tennessee.

Seventh Judicial Circuit.—Mr. Justice Lurton. Districts of Indiana, Northern Illinois, Eastern Illinois, Southern Illinois, Eastern Wisconsin, and Western Wisconsin.

Eighth Judicial Circuit.—Mr. Justice Van Devanter. Districts of Minnesota, Northern Iowa, Southern Iowa, Eastern Missouri, Western Missouri, Eastern Arkansas, Western Arkansas, Nebraska, Colorado, Kansas, North Dakota, South Dakota, Eastern Oklahoma, Western Oklahoma, Wyoming, Utah, and New Mexico.

Ninth Judicial Circuit.—Mr. Justice McKenna. Districts of Northern California, Southern California, Oregon, Nevada, Montana, Eastern Washington, Western Washington, Idaho, Arizona, and Territories of Alaska, and Hawaii.

United States District Courts.—The judicial districts into which the

V. THE NATIONAL ADMINISTRATION

United States is divided are enumerated in the table above. On Sept. 16, 1912, there were 92 district judges in the United States, exclusive of the non-contiguous territories. There are two U. S. district judges in Hawaii and one in Porto Rico.

Circuit and District Judges.—A complete list of circuit and district judges was given in the *AMERICAN YEAR BOOK* for 1911 (p. 209). The following are the changes which occurred during the year: In the First Circuit Frederic Dodge succeeded Francis C. Lowell as circuit judge and was himself succeeded as district judge of Massachusetts by James M. Morton. In the Third Circuit, John B. McPherson succeeded Wm. M. Laning as circuit judge and was himself succeeded as district judge of the Eastern District of Pennsylvania by J. Whitaker Thompson. In the Fourth Circuit, Maryland lost one district judge, Thomas J. Morris retiring. In the Fifth Circuit, John M. Cheney succeeded John W. Locke as district judge of Southern Florida, a recess appointment. In the Sixth Circuit, the vacancy in the circuit court was filled by the appointment of Loyal E. Knappen; in Eastern Kentucky, A. W. J. Cochran was appointed district judge, and Arthur J. Tuttle succeeded Alexis C. Angell as district judge of Eastern Michigan. In the Seventh Circuit the vacancy in the Eastern District of Wisconsin was filled by the appointment of Ferdinand G. Geiger. In the Ninth Circuit, Richard E. Sloane was appointed district judge of Arizona, a recess appointment; in the Western District of Washington, Cornelius H. Hanford resigned (see I, *American History*) and was suc-

ceeded by Edward E. Cushman; in the same district Clinton W. Howard succeeded George Donworth, a recess appointment.

Commerce Court.—A court to be known as the Commerce Court, and having jurisdiction (heretofore possessed by circuit courts) over all cases for the enforcement of any order of the Interstate Commerce Commission, other than for the payment of money, was established by Congress in 1909. No provision has been made for its support beyond March 3, 1913 (see I, *American History*, and IX, *Law and Jurisprudence*). Its members are additional circuit judges, with a salary of \$7,000 each. They were appointed as follows:

Presiding Judge—Martin A. Knapp, Dec. 20, 1910, for five years.

Associate Judges—Robert W. Archbald, Jan. 31, 1911, for four years.

William H. Hunt, Jan. 31, 1911, for three years.

John Emmett Carland, Jan. 31, 1911, for two years.

Julian W. Mack, Jan. 31, 1911, for one year, and reappointed Jan. 31, 1912, for five years.

Judge Robert W. Archbald was impeached in 1912 (see I, *American History*, and IX, *Law and Jurisprudence*), and since August has performed no judicial duties.

Court of Customs Appeals.—The tariff act of 1909 created a new court to hear appeals in custom cases to be called the Court of Customs Appeals, which is constituted as follows:

Presiding Judge—Robert M. Montgomery, Michigan.

Associate Judges—James F. Smith, California; Orion M. Barber, Vermont; Marion De Vries, California; George E. Martin, Ohio.

THE CONSULAR SERVICE

The consular service of the United States was reorganized by act of Congress of April 5, 1906, amended by the act of May 11, 1908. Under

this reorganization there are fifty-seven consuls general, divided into seven classes, the salaries being as follows:

Class 1.....	Salary \$12,000.....	One at London and at Paris.
2.....	8,000.....	Six, located at Berlin, Habana, Hamburg, Hongkong, Rio de Janeiro, and Shanghai.
" 3.....	" 6,000.....	Eight, located at Calcutta, Cape Town, Constantinople, Mexico City, Montreal, Ottawa, Vienna, and Yokohama.
" 4.....	" 5,500.....	Twelve in all.
" 5.....	" 4,500.....	Seventeen in all.
" 6.....	" 3,500.....	Nine in all.
" 7.....	" 3,000.....	Three in all.

V. THE NATIONAL ADMINISTRATION

Consuls.—The United States consuls are divided into nine classes, with salaries ranging from \$8,000 down to \$2,000. There is but one consul of Class 1, located at Liverpool, Eng., at a salary of \$8,000, and but one Class 2, at Manchester, Eng., at a salary of \$6,000.

There are in all 241 consuls, located in the principal cities of the various countries of the world, and there are, in addition, 237 consular agents.

THE DIPLOMATIC SERVICE

ACCREDITED BY UNITED STATES

ACCREDITED TO UNITED STATES

Country	AMBASSADORS			
	Appointed	Commissioned		
<i>Austria-Hungary</i>	Richard C. Kerens	1909	Baron Hengelmüller von Hengervár	1902
<i>Brazil</i>	Edwin V. Morgan	1912	Domicio da Gama	1911
<i>France</i>	Myron T. Herrick	1912	J. J. Jusserand	1903
<i>Germany</i>	John G. A. Leishman	1911	Count J. H. von Bernstorff	1908
<i>Great Britain</i>			Rt. Hon. James Bryce	1907
<i>Italy</i>	Thomas J. O'Brien	1911	Marquis Cusani-Confalonieri	1910
<i>Japan</i>	Lars Anderson	1912	Viscount Suteimi Chinda	1912
<i>Mexico</i>	Henry Lane Wilson	1909	Señor Don Manuel Calero	1912
<i>Russia</i>	Curtis Guild	1911	George Bakhmétéff	1911
<i>Turkey</i>	William Woodville Rockhill	1911	Youssef Zia Pacha	1910

MINISTERS PLENIPOTENTIARY

<i>Argentina Republic</i>	John W. Garrett	1912	Rómulo S. Naón	1912
<i>Belgium</i>	Theodore Marburg	1912	E. Havenith	1911
<i>Bolivia</i>	Horace G. Knowles	1910	Señor Don Ignacio Calderon	1904
<i>Chile</i>	Henry P. Fletcher	1909	Señor Don Eduardo Suárez	1911
<i>China</i>	Wm. James Calhoun	1909	Chang Yin Tang	1909
<i>Colombia</i>	James T. DuBois	1911	Señor Don Julio Betancourt	1912
<i>Costa Rica</i>	Lewis Einstein	1911	Señor Don Joaquin Bernardino Calvo	1899
<i>Cuba</i>	Arthur M. Beaupré	1911	Señor Lodo. Antonio Martin Rivero	1911
<i>Denmark</i>	Maurice Francis Egan	1907	Count Moltke	1908
<i>Dominican Republic</i>	Wm. W. Russell	1911	Señor Don Francisco J. Peynado	1912
<i>Ecuador</i>			Señor Dr. Don Rafael Maria Arizaga	1910
<i>Greece and Montenegro</i>	Jacob G. Schurman	1912	L. A. Coromilas	1906
<i>Guatemala</i>	R. S. Reynolds Hitt	1910	Señor Don Joaquin Mendez	1912
<i>Haiti</i>	Henry W. Furniss	1905	Solon Menos	1912
<i>Honduras</i>	Charles Dunning White	1911	Dr. Alberto Membreno	1912
<i>Netherlands and Luxemburg</i>	Lloyd Bryce	1911	Jonkheer J. Loudon	1908
<i>Nicaragua</i>	George T. Weitsel	1911	Salvadoro Castrillo	1910
<i>Norway</i>	Lauris S. Swenson	1911	M. H. A. Bryn	1910
<i>Panama</i>	H. Percival Dodge	1911	Ramon M. Valdés	1912
<i>Peru</i>	Charles W. Russell	1909	Mirza Ali Kuli Khan	1911
<i>Portugal</i>	H. Clay Howard	1911	Frederico A. Pezet	1912
<i>Roumania, Servia and Bulgaria</i>	Cyrus E. Woods	1912	Viscount de Alte	1902
<i>Roumania, Servia and Bulgaria</i>	John B. Jackson	1911		
<i>Salvador</i>	Wm. Heimke	1909	Don Frederico Mejia	1907
<i>Siam</i>	Fred. W. Carpenter	1912	Prince Traidos Prabandh	1912
<i>Spain</i>	Henry Clay Ide	1909	Señor Don Juan Riaño y Gayangos	1910
<i>Sweden</i>	Chas. H. Graves	1905	W. A. F. Ekengren	1911
<i>Switzerland</i>	Henry S. Bourell	1911	Dr. Paul Ritter	1911
<i>Uruguay and Paraguay</i>	Nicolay A. Grevstad	1911	Dr. Carlos Maria de Pena	1911
<i>Venezuela</i>	Elliott Northcott	1911	Don P. Esequiel Rojas	1909

V. THE NATIONAL ADMINISTRATION

CIVIL SERVICE

CLINTON ROGERS WOODRUFF

The Federal Service: Extension of the Merit System.—In the federal service the President has in four messages to Congress renewed the recommendations made in his annual message of 1910 for the passage of legislation to extend the merit system to offices still outside of the classified service and subject to confirmation by the Senate. On Dec. 7, 1911, in a message on foreign relations, he urged Congress to enact into law the executive orders providing for a non-competitive system of appointment in the diplomatic and consular service, and on Dec. 22, in a message dealing with financial and departmental measures, he urged the classification of "all the local offices throughout the country."

Commission on Economy and Efficiency Report.—Meantime, the President's Commission on Economy and Efficiency had been investigating conditions in the federal civil service, and on Jan. 17, 1912, the President in submitting its report said:

The next step which must be taken is to require of heads of bureaus in the departments at Washington, and of most of the local officers under the departments, qualifications of capacity similar to those now required of certain heads of bureaus and local officers. The extension of the merit system to these officers and a needed readjustment of salaries will have important effects in securing greater economy and efficiency.

A second message on the work of the commission on April 4 again urged the passage of legislation which would allow the classification of local officers in the Departments of the Treasury, Justice, Interior, Post Office and Commerce and Labor. The President stated that the results of the inquiry into the amount of loss occasioned "because of the fact that in many cases two persons are paid for doing work that could easily be done by one" showed "that the loss amounts to at least \$10,000,000 annually." Referring to first- and second-class post offices he stated that if the postmasters of these offices were to be put into the classified

service "the savings in salaries alone, not taking into account any saving due to increased efficiency of operation, would amount to about \$4,500,000." Bills to enact the President's recommendations into law have been introduced in Congress but no action has been taken.

Repeal of the "Gag" Order.—The President has also shown his interest in civil-service administrative questions by repealing the obnoxious "gag" order, which was extremely unpopular with the employees. The "gag" order, originally issued by President Roosevelt and renewed by President Taft, provided that employees could not appeal to Congress or individual congressmen directly for a redress of grievances, but must send their complaints direct to their appropriate heads of departments, who might or might not in their discretion transmit such complaints to Congress. On April 8 the President repealed the order and issued a new order which gives to employees in the civil service full opportunity to address Congress on matters affecting their condition of employment, the only restriction being that such petitions shall first be sent to the head of the department, who must transmit them to Congress, but who may if he wishes attach a statement of his own side of the case.

Rural Carrier Service.—The federal rules formerly required the appointment of the highest eligible in the rural-carrier service. The President in an order of Dec. 30, 1911, extended the same liberty of choice among three names standing highest in filling vacancies in that service as obtains with appointments to all other classified positions, with the exception of fourth-class postmasters, in the appointment of which the eligible standing highest is taken.

Removals.—Civil Service Rule XII, governing removals, was modified by a presidential order Feb. 8, 1912. Under the rule as it was formerly it was left to the administrative officer to decide whether a removal or reduction might be made without charges and an opportunity for re-

V. THE NATIONAL ADMINISTRATION

ply being given. Under the rule as amended return is made to the procedure instituted during the administration of President McKinley requiring charges and an opportunity for reply. No examination of witnesses nor any trial is required, however, except in the discretion of the officer making the removal.

Civil Service in Political Platforms.

—The principles embodied in the civil-service act were again recognized by the national parties in their platforms. The platform of the Republican party contained three new features worthy of notice, the first of which favored the passage of legislation empowering the President to extend the competitive service so far as practicable. The second new feature was that favoring legislation making possible the equitable retirement of disabled and superannuated members of the civil service in order that a higher standard of efficiency may be maintained; and the third favored an extension of the federal employers' liability law.

The Democratic platform, in line with preceding platforms of that party, favored the enforcement of the civil-service law and also contained three specific recommendations for the advance of the system. It favored a reorganization of the service with adequate compensation commensurate with the duties performed, and the extension to all classes of civil-service employees of the benefits of the federal employers'-liability law, and recognized the right of direct petition to Congress by employees for redress of grievances.

The Progressive platform declared:

We demand not only the enforcement of the civil service act in letter and spirit, but also legislation which will bring under the competitive system postmasters, collectors, marshals and all other non-political officers, as well as the enactment of an equitable retirement law; and we also insist upon continuous service during good behavior and efficiency.

Tenure of Office.—The Act of 1883 (the Pendleton Civil Service Act) was seriously threatened by the "five- (later seven-) year tenure of office" rider which the House had "tacked on" to the Legislative, Executive

and Judicial Appropriation bill. The Senate voted to strike it out and inserted the following section by a vote in which party lines were broken:

The Civil-Service Commission shall, subject to the approval of the President, establish a system of efficiency ratings for the classified service in the several executive departments in the District of Columbia, based upon records kept in each department and independent establishment, with such frequency as to make them as nearly as possible records of fact. Such system shall provide a minimum rating of efficiency which must be obtained by an employee before he may be promoted; it shall also provide a maximum rating below which no employee may fall without being demoted; it shall further provide for a maximum rating below which no employee may fall without being dismissed for inefficiency. All promotions, demotions or dismissals shall be governed by provisions of the civil service rules. Copies of all records of efficiency shall be furnished by the departments and independent establishments to the Civil Service Commission for record and in accordance with the provisions of this section, provided that in the event of reductions being made in the force in any of the executive departments no honorably discharged soldier or sailor whose record in said department is rated good shall be discharged or dropped or reduced in rank or salary. In conference a seven-year tenure rider of office was inserted, but the President vetoed the bill because of this and of another rider abolishing the Commerce Court. The House then receded from its position and withdrew the tenure-of-office rider.

Superannuation.—The retirement from the classified civil service of superannuated employees has been proposed in various forms within the past few years. The subject has been exhaustively studied by the President's Commission on Economy and Efficiency and on May 6 the President transmitted to Congress its report, and recommended that the plan proposed by the commission be adopted for the reason that it appeared to be sound in principle and just both to the Government and to its employees. This plan contemplates that each employee in the classified service in the executive departments and offices at Washington shall be retired as soon as he reaches the

age of 70 years and shall receive thereafter an annuity equal to one-half of his annual salary, with the provision that no annuity shall exceed \$600. The plan provides that each person hereafter entering the service shall pay the entire expense of his own retirement by contribution from his salary, so that when he reaches the age of 70 years the fund he has accumulated will provide his retirement allowance.

State Civil Service.—In several sections of the country notable progress has been made. The Ohio Constitutional Convention adopted a proposal, which was voted on by the people in September, incorporating in the constitution of the state provision for the merit system in the service of the state and its political sub-divisions. The proposal is taken almost verbatim from the constitution of the state of New York.

In California two constitutional amendments touching on the subject were adopted by popular vote in Oct., 1911. The first of these provides that the constitutional provision establishing a four-year term of office shall not apply to positions under civil-service laws of the state or any of its political sub-divisions. The other amendment provides that all departments of the city and county of San Francisco shall be subject to the civil service law. The original charter of that city placed both city and county officers under the merit system, but the Supreme Court held this charter provision void because of lack of power to effect such purpose by charter legislation.

Municipal Civil Service: Philadelphia.—The election of Mayor Blankenburg in Philadelphia and that of Mayor Hunt in Cincinnati have resulted in great advances for the merit system in these cities. In Philadelphia the civil-service law had been largely a dead letter. Mayor Blankenburg has made it one of the cardinal features of his administration that the civil-service law should be vigorously enforced in letter and spirit. He reorganized the civil-service commission, appointed men in full sympathy with the purposes of the law, and since then marked improvement has been made in its enforcement. The

commission is planning a reclassification of the city service. It has raised the requirements for patrolman so as to secure younger, taller and stronger men, and canceled an examination held by the previous commission under low requirements in October, 1911. The commission has also abolished the system of appointments in the police and fire departments from eligible lists divided into sections according to police districts (see "Court Decisions," *infra*).

Cincinnati.—In Cincinnati, at the very beginning of his administration, Mayor Hunt declared that the civil-service law, which, as in Philadelphia, had been a dead letter since it went into effect in 1910, was to be rigidly enforced. He reorganized the civil-service commission, following an investigation of the work of the former commission by a committee appointed by the Cincinnati Civil Service Reform Association. The new commission has taken up the work of installing the merit system in Cincinnati with much vigor. It has issued a new set of rules, classified and graded positions covered by the law, and is holding examinations as rapidly as it can.

Chicago.—Under the rules of the civil service board of the South Park Commissioners of Chicago, issued in October, 1911, the examinations for positions are not restricted to applicants who are residents of Chicago, but are open to all, though the superintendent of employment may, by giving proper notice, require that applicants for a particular examination shall have resided in Cook County for a specified time.

New York.—In New York City Mayor Gaynor in December, 1911, sent a letter to all heads of departments and bureaus under his jurisdiction directing that hereafter appointments should be made in numerical order from the eligible lists. This policy has been in force in the police and fire departments by order of the mayor since the beginning of his administration and voluntarily in four other departments under him.

Kansas City.—Mayor Jost, of Kansas City, has made a clean sweep of the civil service board. The president was replaced on the expiration

of his term; and the other commissioners were dismissed for refusing to comply with the mayor's request that they should withdraw the certification of men who had passed the civil-service examinations and were suing for the positions to which they and the civil-service commission thought they were legally entitled, a position which the Supreme Court of the state subsequently maintained.

In New Jersey in the November elections in 1911 the cities of Jersey City, Trenton, South Orange, and Hudson and Mercer counties voted by overwhelming majorities to adopt the provisions of the state civil-service law for their local services.

Pueblo, Colo., and St. Paul, Minn., recently adopted charters containing provision for the merit system, and the city council of Chattanooga adopted an ordinance to put into effect the civil-service provisions of the Chattanooga commission charter.

Court Decisions.—In Illinois in the case of *People ex rel. James W. Gullett, et al. vs. James S. McCullough*, the Supreme Court upheld the constitutionality of the civil-service law approved June 10, 1911. This case was of importance because had it been decided against the constitutionality of the law it would have seriously limited the extent of the merit system in Illinois.

In Philadelphia on April 1 the Court of Common Pleas, No. 2, handed down a decision in the case of *Smith et al. vs. the City of Philadelphia et al.*, in which it held that patrolmen in Philadelphia who had been appointed from eligible lists arranged by districts held their positions illegally. The last civil-service commission had divided an eligible list for patrolmen into 35 separate lists corresponding to the 35 police districts in the city. Under this system whenever the director of public safety wished to make appointments of patrolmen certifications were made not from the general list, but from the specific district list for the district to which appoint-

ments were to be made. The practice grew up of persons on an eligible list effecting a change of residence so as to get placed on a district list where their rating would give them a high position and, after having secured appointments, moving back to their place of original residence.

In New York the Court of Appeals in the case of *Simon vs. Maguire* has upheld the action of the New York City civil-service commission in putting in the competitive class the position of probation officer in the New York City inferior courts. The decision of the court is unusually striking in that it unanimously reverses the unanimous decision of the appellate division holding that the position should be exempt. The decision of the highest court is of great importance to the merit system in New York City in keeping the probation officers out of politics, and the municipal civil-service commission has taken a high stand in insisting that all the probation officers, who had been appointed without examination following the decision of the lower court that the places were exempt, should be dismissed and their places filled by appointments from the eligible list.

Civil-service reform in its application to municipal affairs and as a means of promoting efficiency was a leading topic of the eighteenth annual meeting of the National Municipal League. The president's annual address was devoted to a discussion of "Expert City Management" and various papers were presented, including a preliminary report from a committee on the selection and retention of experts in municipal office.

The fifth meeting of the National Assembly of Civil Service Commissions was held at Spokane, Wash., June 21-22, 1912. The annual meeting of the National Civil Service Reform League was held in Milwaukee, Dec. 5-6. Robert D. Jenks, of Philadelphia, was elected chairman of the council, and Robert W. Belcher, of New York, secretary.

VI. STATE AND COUNTY GOVERNMENT

JOHN M. MATHEWS

In the following series of tables the more important facts relative to the forty-eight states which at present constitute the American Union are brought together for convenient reference:

1. The first table gives the area and population of the states, together with the date upon which they severally ratified the constitution of the United States, or upon which they were admitted to the Union. The population at 1900 and 1910 is given, together with the percentage of increase since 1900, and the rank of the several states in population in 1910.

The population of the continental United States at the thirteenth census, taken April 15, 1910, was 91,402,151, an increase of 15,977,691 over the population on June 1, 1900, and an increase of 21 per cent., as compared with an increase of 22.7 per cent. in 1900. The states in which the population increased more than 50 per cent. include Oklahoma, New Mexico, Arizona, Nevada, Washington, Oregon, California, North Dakota, Montana, Wyoming, and Idaho. All these states are situated in the western half of the United States.

Including Alaska, Hawaii, Porto Rico, and military persons abroad, the population was 93,402,151. If the population of the Philippine Islands (7,635,426 in 1903) is added, with estimates for Guam, Samoa, and the Canal, the total population of the United States and possessions on April 15, 1910, was 101,100,000.

The new apportionment of state representatives in Congress is based upon the population as given upon the following page.

2. The second table gives for each state the assessed valuation of prop-

erty, as made in 1911 or 1912; the total state indebtedness and the amount of sinking funds held against the same; the appropriations for the annual expenses of the state, which, in some cases, indicate the actual revenue of the year; and the total expenditures for the year. The data furnished in this table were courteously supplied by the treasurers or comptrollers of the several states.

3. The third table revises and extends the table on pp. 184-9 of the YEAR BOOK for 1910, which gives the facts in regard to the state constitutions; dates of adoption; methods of ratification of present and former constitutions, and the existing methods of amendment in each state.

4. The fourth table gives the state governors; their politics; the length of the governor's term in each state; the date of the beginning and ending of his term; and the governor's salary.

5. The fifth table presents the main features regarding the state legislatures, including the number of members of each house; length of the term; frequency of session; the limit upon duration of sessions, if any; and the salaries of members of both branches of the legislature.

6. The sixth table indicates the main facts regarding the state judiciary; the name of the courts and number of judges; how chosen; length of term; and salary.

7. The seventh table indicates the number of counties in each state, and the general facts as to the county officers, their titles, which, as a rule, indicate their functions, and whether elected or appointed.

An eighth table appeared in the YEAR BOOK for 1910, giving the census returns of receipts and payments of counties in 1902.

VI. STATE AND COUNTY GOVERNMENT

I. THE STATES OF THE UNION

AREA, POPULATION, DATES OF RATIFICATION AND ORGANIZATION, AND ORDER OF ADMISSION TO THE UNION

		Ratification of Constitution	Area	Population, 1900	Population, 1910	Percentage of Increase, 1900-1910	Rank in Population, 1910
New Hampshire	June	21, 1788	9,031	411,588	430,572	4.6	39
Massachusetts	February	6, 1788	8,039	2,805,348	3,366,410	20.0	6
Rhode Island	May	29, 1790	1,067	428,556	542,610	26.6	38
Connecticut	January	9, 1788	4,820	908,420	1,114,756	22.7	31
New York	July	26, 1788	47,654	7,268,894	9,113,614	25.4	1
New Jersey	December	18, 1788	7,514	1,883,669	2,537,167	34.7	11
Pennsylvania	December	12, 1787	44,832	6,302,115	7,665,111	21.6	2
Delaware	December	7, 1787	1,965	184,735	202,322	9.5	46
Maryland	April	28, 1788	9,941	1,188,044	1,294,450	9.0	27
Virginia	June	26, 1788	40,262	1,854,184	2,061,612	11.2	20
North Carolina	November	21, 1789	48,740	1,893,810	2,206,287	16.5	16
South Carolina	May	23, 1788	30,495	1,340,316	1,515,400	12.1	26
Georgia	January	2, 1788	58,725	2,216,331	2,609,121	17.7	10

		Date of Admission	Area	Population, 1900	Population, 1910	Percentage of Increase, 1900-1910	Rank in Population, 1910
Kentucky	February	4, 1791	40,181	2,147,174	2,289,905	6.6	14
Vermont	February	18, 1791	9,124	343,641	355,956	3.6	42
Tennessee	June	1, 1796	41,687	2,020,616	2,184,789	8.1	17
Maine	March	3, 1820	29,895	694,466	742,371	6.9	34
Texas	December	29, 1845	262,398	3,048,710	3,896,543	27.8	5
West Virginia	June	20, 1863	24,022	958,800	1,221,119	27.4	28
Ohio	April	30, 1802	40,740	4,157,545	4,767,121	14.7	4
Louisiana	April	8, 1812	45,409	1,381,625	1,656,388	19.9	24
Indiana	December	11, 1816	35,885	2,516,462	2,700,576	7.3	9
Mississippi	December	10, 1817	46,362	1,551,270	1,797,114	15.8	21
Illinois	December	3, 1818	56,002	4,821,550	5,638,591	16.9	3
Alabama	December	14, 1819	51,279	1,828,697	2,138,693	16.9	18
Missouri	March	2, 1821	68,727	3,106,665	3,293,335	6.0	7
Arkansas	June	15, 1836	52,525	1,311,564	1,574,449	66.2	25
Michigan	January	26, 1836	57,480	2,420,982	2,810,173	16.1	8
Florida	March	3, 1845	54,861	528,542	752,619	42.1	33
Iowa	December	28, 1846	55,586	2,231,853	2,224,771	.3	15
Wisconsin	May	29, 1848	55,256	2,069,042	2,333,560	12.7	13
California	September	9, 1850	158,092	1,485,053	2,377,549	60.1	12
Minnesota	May	11, 1858	80,858	1,751,394	2,075,708	18.5	19
Oregon	February	14, 1859	95,607	413,536	672,765	62.7	35
Kansas	January	29, 1861	81,774	1,470,495	1,690,949	15.0	22
Nevada	March	21, 1864	109,821	42,335	81,575	93.4	48
Nebraska	February	9, 1867	76,808	1,066,300	1,192,214	11.8	29
Colorado	March	3, 1875	103,658	539,700	799,024	48.0	32
North Dakota	February	22, 1889	70,183	319,146	577,056	80.8	37
South Dakota	February	22, 1889	76,868	401,570	583,888	45.4	36
Montana	February	22, 1889	145,776	243,329	376,053	54.5	40
Washington	February	22, 1889	66,836	518,103	1,141,990	120.4	30
Idaho	July	3, 1890	83,779	161,772	325,594	101.3	44
Wyoming	July	10, 1890	97,594	92,531	145,965	57.7	47
Utah	July	16, 1894	82,184	276,749	373,351	34.9	41
Oklahoma	November	16, 1907	69,414	790,391	1,657,155	109.7	23
New Mexico	January	6, 1912	122,580	195,310	327,301	67.6	43
Arizona	February	14, 1912	113,020	122,931	204,354	66.2	45

AREA.—The total area of continental United States is 2,974,159 square miles. The total area, including Alaska and Hawaii, is 3,624,122 square miles. The area of Alaska is 590,884 square miles; of the Hawaiian Islands, 6,449 square miles; of the Philippine Islands, 115,026 square miles; and of Porto Rico, 34,035 square miles.

VI. STATE AND COUNTY GOVERNMENT

II. STATE INDEBTEDNESS, TAXATION, REVENUES, AND EXPENDITURES

The figures in the following table, for the most part courteously supplied by the treasurers or auditors of the various states, are the latest available. They relate in general to the fiscal year ending in 1912; in the case of states whose fiscal year coincides with the calendar year, the figures are for the year ending December 31, 1911.

STATE	Assessed Value of Property	Tax Rate per \$1,000	Bonded Indebtedness	Sinking Fund	Total Receipts	Total Expenditures
Alabama.....	\$566,807,488	\$6.50	\$9,057,000	None	\$6,061,236	\$5,906,255
Arizona.....	140,338,191	9.00	3,045,275	\$5,324	1,192,350	1,300,855
Arkansas.....	298,003,167	6.875	1,250,500	14,434	6,902,386	6,812,486
California.....	604,810,464	.0441	27,431,300	18,536	21,445,956	18,990,025
Colorado.....	414,885,770	4.00	4,207,116	.....	.....	.....
Connecticut.....	1,041,334,019	Various	7,064,100	None	9,915,417	8,105,750
Delaware.....	90,116,638	None	826,785	1,051,313	816,233	847,171
Florida.....	196,805,441	7.50	601,567	None	3,141,315	2,965,571
Georgia.....	842,035,229	5.00	6,734,202	None	5,558,446	5,540,294
Idaho.....	329,784,781	3.14	2,402,750	225,000	3,792,000	2,945,000
Illinois.....	2,318,333,241	3.50	None	5,499,210	14,822,466	13,853,667
Indiana.....	1,891,601,167	.90	1,260,163	.....	.....	.....
Iowa.....	713,318,825	3.90	None	None	4,983,448	5,224,501
Kansas.....	2,746,885,505	1.20	370,000	23,000	1,475,074	1,451,217
Kentucky.....	914,267,050	5.00	11,793,766	189,552	.....	.....
Louisiana.....	544,820,340	5.45	11,108,300	None	7,182,305	6,196,237
Maine.....	451,780,119	21.70	456,600	*502,202	4,884,954	4,518,474
Maryland.....	1,174,725,954	2.325	13,028,095	7,147,128	8,908,454	8,553,744
Massachusetts.....	5,249,175,995	.....	116,234,162	35,844,648	47,494,986	47,975,958
Michigan.....	1,898,057,356	2.38	None	None	14,190,498	7,445,519
Minnesota.....	1,212,567,794	3.88	900,000	.....	15,805,302	16,321,065
Mississippi.....	398,419,138	6.00	2,442,899	None	4,179,307	4,500,330
Missouri.....	1,804,298,191	1.70	4,398,839	209,165	7,598,067	7,388,902
Montana.....	346,550,585	2.50	200,000	4,690	4,046,691	3,568,131
Nebraska.....	463,371,889	5.20	None	.....	\$10,862,142	\$10,890,121
Nevada.....	95,170,227	6.00	474,160	43,008	994,882	1,128,347
New Hampshire.....	379,647,530	15.90	2,405,137	.....	†3,081,881	2,514,054
New Jersey.....	2,289,770,280	None	None	None	9,657,366	7,696,475
New Mexico.....	64,506,560	10.00	966,500	.....	911,258	952,658
New York.....	10,121,277,458	.60	109,702,660	.....	71,214,919	73,440,640
North Carolina.....	740,713,962	4.30	7,510,000	.....	.....	.....
North Dakota.....	294,770,325	4.40	937,300	116,875	4,651,256	4,611,880
Ohio.....	†6,202,132,511	0.451	None	.....	.....	.....
Oklahoma.....	1,326,800,000	22.50	3,055,000	.....	2,486,281	2,410,213
Oregon.....	890,644,164	3.44	None	*538,310	5,081,242	2,542,932
Pennsylvania.....	5,783,668,326	None	659,160	126,350	32,374,890	35,516,410
Rhode Island.....	552,784,617	1.80	5,030,000	593,310	2,543,663	2,448,411
South Carolina.....	287,132,019	5.75	6,528,485	877,132	†3,857,520	3,132,164
South Dakota.....	354,278,413	4.00	None	None	3,779,652	3,208,519
Tennessee.....	625,010,886	3.50	11,793,666	.....	4,666,537	4,122,852
Texas.....	2,515,632,745	0.26½	3,977,300	None	18,119,072	17,973,122
Utah.....	200,000,000	7.50	1,210,000	.....	.....	.....
Vermont.....	221,447,887	19.17	135,500	None	2,303,754	2,350,508
Virginia.....	776,129,648	3.50	24,844,628	.....	7,052,190	7,183,467
Washington.....	1,005,086,251	5.79	None	.....	†7,047,474	†7,521,509
West Virginia.....	1,168,012,658	.10	None	4,950,612	2,122,421	2,842,596
Wisconsin.....	2,941,412,842	11.086	None	*3,161,512	14,626,753	13,985,248
Wyoming.....	180,750,629	3.08	117,000	.....	1,178,000	895,748

* Surplus. † Includes balance for preceding year. ‡ Property assessed at full value.

§ Biennial report.

III. STATE CONSTITUTIONS

For the revision of the table of state constitutions on pp. 184-9 of the *AMERICAN YEAR BOOK* for 1910, it is necessary only to note that the following states have adopted popular initiative as a second means of proposing amendments: California (1911), Colorado (1911), Florida (1912), Nebraska (1912), Ohio (1912), and Texas (1911). The data for Arizona and New Mexico, admitted as states in 1912, are as follows:

STATE	Date	METHOD OF ADOPTION		PRESENT METHOD OF AMENDMENT			PRESENT METHOD OF GENERAL REVISION	
		Framed by	Popular Ratification	Proposed by	Limitations	Popular Ratification	Convention Called by	Popular Ratification
New Mexico.....	1911	Convention	Yes	$\frac{3}{4}$ members of each house	Not more than three at one time	Majority equal to 40 per cent. of total vote in one-half counties	$\frac{1}{2}$ of each house and popular vote	Majority of votes
Arizona.....	1911	Convention	Yes	(1) Majority of each house (2) Popular initiative		Majority vote on question	Popular vote	Majority vote

IV. STATE AND TERRITORIAL GOVERNORS

STATE OR TERRITORY	Governor	Capital	Length of Term	Term Expires	Salary
Maine.....	Wm. T. Haines	Augusta	2	January, 1915	\$3,000
New Hampshire.....	Franklin Worcester	Concord	2	January, 1915	3,000
Vermont.....	A. M. Fletcher	Montpelier	2	October, 1914	2,500
Massachusetts.....	Eugene A. Foss	Boston	1	January, 1914	8,000
Rhode Island.....	A. J. Pothier	Providence	1	January, 1914	3,000
Connecticut.....	S. E. Baldwin	Hartford	2	January, 1915	4,000
New York.....	William Sulzer	Albany	2	January, 1915	10,000
New Jersey.....	Woodrow Wilson	Trenton	3	January, 1914	10,000
Pennsylvania.....	J. K. Tener	Harrisburg	4	January, 1915	10,000
Delaware.....	C. R. Miller	Dover	4	January, 1917	4,000
Maryland.....	P. L. Goldsborough	Annapolis	4	January, 1916	4,500
Virginia.....	Wm. H. Mann	Richmond	4	February, 1914	5,000
West Virginia.....	H. D. Hatfield	Charleston	4	March, 1917	5,000
North Carolina.....	Locke Craig	Raleigh	4	January, 1917	4,000
South Carolina.....	C. J. Blease	Columbia	2	January, 1915	3,000

Democrats in *Italics*, Republicans in Roman.

IV. STATE AND TERRITORIAL GOVERNORS—Continued

STATE OR TERRITORY	Governor	Capital	Length of Term	Term Expires	Salary
Georgia.....	<i>J. M. Slaton</i>	Atlanta	2	July, 1915	\$5,000
Florida.....	<i>Park Trammell</i>	Tallahassee	4	January, 1917	5,000
Kentucky.....	<i>J. B. McCreary</i>	Frankfort	4	December, 1915	6,500
Tennessee.....	<i>B. W. Hooper</i>	Nashville	2	January, 1915	3,500
Alabama.....	<i>Kenneth O'Neal</i>	Montgomery	4	January, 1915	7,500
Mississippi.....	<i>Earl Brewer</i>	Jackson	4	January, 1916	4,500
Arkansas.....	<i>J. T. Robinson</i>	Little Rock	2	January, 1915	4,000
Louisiana.....	<i>Luther E. Hall</i>	Baton Rouge	4	May, 1916	5,000
Texas.....	<i>O. B. Colquitt</i>	Austin	2	January, 1915	4,000
Oklahoma.....	<i>Lee Cruce</i>	Oklahoma City	4	January, 1915	4,500
Ohio.....	<i>James M. Cox</i>	Columbus	2	January, 1915	10,000
Indiana.....	<i>S. M. Ralston</i>	Indianapolis	4	January, 1917	8,000
Illinois.....	<i>Edward F. Duane</i>	Springfield	4	January, 1917	12,000
Michigan.....	<i>W. N. Ferris</i>	Lansing	2	January, 1915	5,000
Wisconsin.....	<i>F. E. McGovern</i>	Madison	2	January, 1915	5,000
Minnesota.....	<i>A. O. Eberhart</i>	St. Paul	2	January, 1915	7,000
Iowa.....	<i>Geo. W. Clarke</i>	Des Moines	2	January, 1915	6,400
Missouri.....	<i>R. W. Major</i>	Jefferson City	4	January, 1917	5,000
Kansas.....	<i>Geo. H. Hodges</i>	Topeka	2	January, 1915	5,000
Nebraska.....	<i>J. H. Morkhead</i>	Lincoln	2	January, 1915	2,500
South Dakota.....	<i>F. M. Byrne</i>	Pierre	2	January, 1915	3,000
North Dakota.....	<i>L. E. Hanna</i>	Bismarck	2	January, 1915	5,000
Montana.....	<i>S. V. Stewart</i>	Helena	4	January, 1917	5,000
Idaho.....	<i>J. M. Haines</i>	Boise	2	January, 1915	5,000
Wyoming.....	<i>J. M. Carey</i>	Cheyenne	4	January, 1915	4,000
Colorado.....	<i>E. M. Ammons</i>	Denver	2	January, 1915	5,000
New Mexico.....	<i>W. C. McDonald</i>	Santa Fe	4	January, 1916	5,000
Arizona.....	<i>G. W. P. Hunt</i>	Phoenix	2	January, 1914	4,000
Utah.....	<i>Wm. Spry</i>	Salt Lake City	4	January, 1917	4,000
Nevada.....	<i>T. L. Oddie</i>	Carson City	4	January, 1915	4,000
California.....	<i>H. W. Johnson</i>	Sacramento	4	January, 1915	10,000
Oregon.....	<i>Oswald West</i>	Salem	4	January, 1915	5,000
Washington.....	<i>Ernest Lister</i>	Olympia	4	January, 1917	6,000

VI. STATE AND COUNTY GOVERNMENT

V. STATE AND TERRITORIAL LEGISLATURES

STATE OR TERRITORY	NUMBER OF MEMBERS		LENGTH OF TERM (YEARS)		Regular Sessions	Regular Session Begins	Limit of Session (days)	Salary
	Senate	House	Senate	House				
<i>Maine</i>	31	151	2	2	Biennial	January, 1913	None	\$300 per year.
<i>New Hampshire</i>	36	390	2	2	Biennial	January, 1913	None	200 per term.
<i>Vermont</i>	30	246	2	2	Biennial	October, 1914	None	4 per day.
<i>Massachusetts</i>	40	240	1	1	Annual	January, 1913	None	750 per year.
<i>Rhode Island</i>	38	72	2	2	Annual	January, 1913	None	5 per day, not over 60 days.
<i>Connecticut</i> ¹	35	255	2	2	Biennial	January, 1913	5 mo.	300 per year.
<i>New York</i>	51	150	2	1	Annual	January, 1913	None	\$1,500 per year.
<i>New Jersey</i>	21	60	3	1	Annual	January, 1913	None	500 per year.
<i>Pennsylvania</i>	50	207	4	2	Biennial	January, 1913	None	1,500 per session.
<i>Delaware</i> ¹	17	35	4	2	Biennial	January, 1913	60	5 per day.
<i>Maryland</i>	27	101	4	2	Biennial	January, 1914	90	\$5 per day.
<i>Virginia</i>	40	100	4	2	Biennial	January, 1914	60	500 for regular session. 250 for extra session.
<i>West Virginia</i> ²	30	87	4	2	Biennial	January, 1913	45	5 per day.
<i>North Carolina</i>	50	120	2	2	Biennial	January, 1913	60	4 per day.
<i>South Carolina</i>	42	124	4	2	Annual	January, 1913	None	200 per session.
<i>Georgia</i>	44	184	2	2	Annual	June, 1913	50	4 per day.
<i>Florida</i>	32	68	4	2	Biennial	April, 1913	60	6 per day.
<i>Kentucky</i>	38	100	4	2	Biennial	January, 1914	60	\$10 per day.
<i>Tennessee</i>	33	99	2	2	Biennial	January, 1913	75	4 per day.
<i>Alabama</i>	35	106	4	4	Quadrennial	January, 1915	50	4 per day.
<i>Mississippi</i>	45	136	4	4	Biennial	January, 1914	45	400 regular, \$5 per day, special session.
<i>Arkansas</i>	35	100	4	2	Biennial	January, 1913	90	5 per day.
<i>Louisiana</i>	42	115	4	4	Biennial	May, 1914	60	5 per day.
<i>Texas</i>	31	133	4	2	Biennial	January, 1913	.....	5 per day, for 60 days, \$2 per day thereafter.
<i>Oklahoma</i>	44	109	4	2	Biennial	January, 1913	.....	6 per day, for 60 days, \$2 per day thereafter.

Democratic legislatures in Roman; Republican in *italics*. Those marked * are doubtful; those marked † have Progressive majorities; ¹ Republican Senate, Democratic House; ² Democratic Senate, Republican House.

VI. STATE AND COUNTY GOVERNMENT

V. STATE AND TERRITORIAL LEGISLATURES—Continued

STATE OR TERRITORY	NUMBER OF MEMBERS		LENGTH OF TERM (YEARS)		Regular Sessions	Session Begins	Limit of Session (days)	Salary
	Senate	House	Senate	House				
Ohio.....	34	117	2	2	Biennial	January, 1913	None	\$1,000 per year.
Indiana.....	50	100	4	2	Biennial	January, 1913	60	6 per day.
Illinois*.....	51	153	4	2	Biennial	January, 1913	None	2,000 per session.
Michigan.....	32	100	2	2	Biennial	January, 1913	None	800 regular session.
Wisconsin.....	33	100	4	2	Biennial	January, 1913	None	5 per day, extra session.
Minnesota.....	63	119	4	2	Biennial	January, 1913	90	500 per year.
Iowa.....	50	108	4	2	Biennial	January, 1913	None	550 regular session.
Missouri.....	34	142	4	2	Biennial	January, 1913	.....	5 per day, for 70 days.
Kansas.....	40	125	4	2	Biennial	January, 1913	50	1 per day thereafter.
Nebraska ¹	33	100	2	2	Biennial	January, 1913	60	3 per day.
South Dakota.....	45	104	2	2	Biennial	January, 1913	60	600 per session.
North Dakota.....	47	99	4	2	Biennial	January, 1913	60	5 per day.
Montana.....	27	73	4	2	Biennial	January, 1913	60	5 per day.
Idaho.....	23	51	2	2	Biennial	January, 1913	60	\$12 per day.
Wyoming.....	27	56	4	2	Biennial	January, 1913	40	5 per day.
Colorado.....	35	65	4	2	Biennial	January, 1913	90	8 per day.
New Mexico.....	24	49	4	2	Biennial	January, 1914	60	7 per day.
Arizona.....	19	35	2	2	Biennial	January, 1914	60	5 per day.
Utah.....	18	45	4	2	Biennial	January, 1913	60	7 per day.
Nevada.....	19	48	4	2	Biennial	January, 1913	60	4 per day.
California ¹	40	80	4	2	Biennial	January, 1913	None	10 per day, not to exceed \$600 annually.
Oregon.....	30	60	4	2	Biennial	January, 1913	40	1,000 annually.
Washington.....	42	96	4	2	Biennial	January, 1913	60	3 per day.
Alaska.....	8	16	4	2	Biennial	March, 1913	60	5 per day.
Hawaii.....	.....	.....	4	2	Biennial	February, 1913	90	\$400 per year.
Porto Rico.....	11	35	4	2	Annual	January, 1913	60	5 per day.

Democratic legislatures in Roman; Republican in *italics*; those marked * are doubtful; those marked † have Progressive majorities; ¹ Republican Senate, Democratic House; ² Democratic Senate, Republican House.

VI. STATE AND COUNTY GOVERNMENT

VI. STATE JUDICIARY

State	HIGHEST STATE COURT					OTHER COURTS				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Disa.	No. of Judges	Term (years)	How Chosen
Maine.....	Supreme Court	8	7	Gov. and Council	.....	Nisi Prius Superior Courts in 2 counties	.....	.....	.....	Gov. and Council
New Hampshire.....	Supreme Court	5	(a)	Gov. and Council	\$4,200	Superior Court	.....	5	7	.....
Vermont.....	Supreme Court	5	2	Legislature	4,000	County Courts	.....	25	(b)	Gov. and Council
Massachusetts.....	Supreme Court	7	(b)	Gov. and Council	2,500	Superior Court	.....	6	(c)	Legislature
Rhode Island.....	Supreme Court	5	8	Legislature	8,000	Superior Court	.....	12	8	Gov. and Legia.
Connecticut.....	Court of Errors	6	8	Gov. and Legis- ture	8,000	Courts of Common Pleas in 5 counties	.....	.....	.....	.....
New York.....	Court of Appeals	9	14	Elected	\$14,000 13,700	Appellate Division Supreme Court County Courts	4 9	98	14	Elected Elected
New Jersey.....	Court of Errors and Appeals	16	7	Gov. and Senate	.....	Chancellor Supreme Court Circuit Court	.....	8 9	.....	Gov. and Senate Gov. and Senate
Pennsylvania.....	Supreme Court	7	21	Elected	10,500 10,000	Superior Court Court of Common Pleas	.....	7	10	Elected
Delaware.....	Court of Errors and Appeals	6	12	Gov. and Senate	.....	Chancellor	.....	.....	.....	Gov. and Senate
Maryland.....	Court of Appeals	8	15	Elected by Dis- tricts	.....	Circuit Courts Special Courts, in Balt. Circuit Courts	8 31	.....	15 8	Elected Legislature
Virginia.....	Supreme Court of Appeals	8	15	Legislature	5,200 5,000	.....	.....	.....	.....	.....
West Virginia.....	Supreme Court of Appeals	4	12	Elected	.....	Circuit Courts	18	.....	8	Elected
North Carolina.....	Supreme Court	5	8	Elected	3,000	Superior Court	16	16	8	Elected
South Carolina.....	Supreme Court	4	8	Legislature	3,000	Circuit Courts	.....	.....	4	Elected
Georgia.....	Supreme Court	6	6	Elected	.....	Court of Appeals	3	28	.....	Elected
Florida.....	Supreme Court	6	6	Elected	.....	Superior Court Circuit Courts County Courts	26 8	8	.....	Gov. and Senate

(a) Until 70 years of age. (b) During good behavior. (c) Until removed by the legislature.

VI. STATE AND COUNTY GOVERNMENT

VI. STATE JUDICIARY—(Continued)

STATE	HIGHEST STATE COURT				OTHER COURTS				
	Name of Court	No. of Judges	Length of Term (Years)	How Chosen	Salary	Name	No. of Dist. Judges	Term (Years)	How Chosen
Kentucky.....	Court of Appeals	7	8	Elected by districts	\$5,000	Circuit Courts	36	6	Elected
Tennessee.....	Supreme Court	5	8	Elected	5,000	Court of Civil Appeals	Var.	5	Elected
Alabama.....	Supreme Court	7	6	Elected	5,000	Chancery Courts	12	.....	Elected
Mississippi.....	Supreme Court	3	9	Gov. and Senate	4,500	Criminal Courts	20	.....	Elected
Arkansas.....	Supreme Court	5	8	Elected	4,000	Chancery Courts	5	6	Elected
Louisiana.....	Supreme Court	5	.....	Elected	6,000	Circuit Courts	16	6	Elected
Texas.....	Supreme Court	3	6	.....	.....	Chancery Courts	13	4	Gov. and Senate
Oklahoma.....	Supreme Court	5	6	Elected	.....	Circuit Courts	17	4	Gov. and Senate
Ohio.....	Supreme Court	6	6	Elected	\$6,500	Circuit Courts of Appeal	24	4	Elected
Indiana.....	Supreme Court	5	6	Elected	6,000	Court of Criminal Appeals	3	.....	.....
Illinois.....	Supreme Court	7	9	Elected	10,000	Courts of Civil Appeals	5	15	.....
Michigan.....	Supreme Court	8	8	Elected	7,000	Criminal Court of Appeals	21	.....	Elected
Wisconsin.....	Supreme Court	7	10	Elected	6,000	District Courts	.....	.....	.....
Minnesota.....	Supreme Court	5	6	Elected	7,000	District Courts	.....	.....	.....
Iowa.....	Supreme Court	6	6	Elected	6,000	Superior Courts in 10 count's	8	6	Elected
Missouri.....	Supreme Court	7	10	Elected	4,500	Circuit Courts	2	6	Elected
Kansas.....	Supreme Court	7	6	Elected	4,000	Courts of Appeal	62	.....	.....
Nebraska.....	Supreme Court	7	6	Elected	4,500	County Courts	14	15	.....
South Dakota.....	Supreme Court	5	6	Elected	3,000	Circuit Courts	4	65	Elected
North Dakota.....	Supreme Court	5	10	Elected	.....	Circuit Courts	18	102	Elected
					.....	Circuit Courts	39	45	Elected
					.....	District Courts	17	.....	Elected
					.....	District Courts	19	.....	Elected
					.....	District Courts	20	53	Elected
					.....	Courts of Appeal	3	9	12
					.....	Circuit Courts	36	55	Elected
					.....	District Courts	38	38	Elected
					.....	District Courts	16	29	Elected
					.....	District Courts	10	4	Elected
					.....	District Courts	8	4	Elected

VI. STATE JUDICIARY—(Continued)

State	Highest State Court				Other Courts			
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dist. Judges	No. of Term (years)
Montana.....	Supreme Court	3	6	Elected	\$4,000	District Courts	13	4
Idaho.....	Supreme Court	3	6	Elected	5,000	District Courts	7	4
Wyoming.....	Supreme Court	3	8	Elected	5,000	District Courts	4	6
Colorado.....	Supreme Court	7	6	Elected	5,000	District Courts	13	6
New Mexico.....	Supreme Court	3	8	Elected	6,000	County Courts	.....	.....
Arizona.....	Supreme Court	3	6	Elected	6,000	District Courts	8	6
Utah.....	Supreme Court	3	6	Elected	5,000	Superior Courts	14	4
Nevada.....	Supreme Court	3	6	Elected	6,000	District Courts	7	4
California.....	Supreme Court	7	12	Elected	8,000	District Courts	9	4
Oregon.....	Supreme Court	5	6	Elected	4,500	Courts of Appeal	3	12
Washington.....	Supreme Court	9	6	Elected	5,000	Superior Courts	53	6
						Circuit Courts	9	6
						Superior Courts	25	4

VII. COUNTY OFFICERS

State	No. of Counties	County Bd. Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
Maine.....	16	3		El.	El.	El.	App.	El.	El.	.....	El.	App.	El.	El.				
New Hampshire.....	10	3		App.	El.	El.	App.	App.	El.	.....	El.	App.	El.	El.				
Vermont.....	14	2	El.	App.	El.	El.	App.	El.	El.	.....	El.	App.	El.	El.				
Massachusetts.....	14	3		App.	Dist.	El.	.....	El.	El.	.....	El.	App.	El.	El.				
Rhode Island.....	5	None																
Connecticut.....	8	App. 3	s.	dist.	App.	App.	App.	App.	App.	.....	.....	App.	App.	App.				
New York.....	61	Var.	El.	El.	El.	El.	El.	.....	El.	El.	.....	s.	El.	El.		dist.	El.	App.
New Jersey.....	21	Var.	El.	El.	App.	El.	El.	El.	El.	El.	.....	App.	El.	El.		App.	s.	App.
Pennsylvania.....	67	3		El.	El.	El.	El.	El.	El.	.....	El.	El.	El.	El.		App.	App.	App.
Delaware.....	3	7-10		El.	El.	El.	El.	El.	El.	.....	El.					App.	App.	App.
Maryland.....	24	3-5		El.	El.	El.	App.	El.		.....	.....		El.	El.		App.	App.	App.
Virginia.....	100	3-6		.....	El.	El.	App.	El.		.....	.....		El.	El.		App.	App.	App.
West Virginia.....	18a				El.	El.	App.	El.		.....	.....		El.	El.		El.	App.	App.
	55	3			El.	El.	App.	El.		.....	.....		El.	El.		El.	App.	App.

VI. STATE AND COUNTY GOVERNMENT

VII. COUNTY OFFICERS—(Continued)

States	No. of Counties	County Bd. Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
North Carolina	98	3-5			Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	App.	El.	El.	El.	App.	App.	App.
South Carolina	43	Var.			Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	App.	El.	El.	El.	App.	App.	App.
Georgia	148				Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	App.	El.	El.	El.	App.	App.	App.
Florida	47	5			Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	App.	El.	El.	El.	App.	App.	App.
Kentucky	120	8	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Tennessee	96	Var.	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Alabama	67	5	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Mississippi	79	5			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Louisiana	606	Var.			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Texas	245	4	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Oklahoma	77	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Arkansas	75	Var.	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Missouri	115	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Ohio	88	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Indiana	92	3(7)c	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Illinois	102	Var.	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Michigan	83	Var.			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Wisconsin	71	Var.	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Minnesota	86	3-5			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Iowa	99	3-7			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Kansas	105	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Nebraska	92	Var.	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
South Dakota	67	3-5			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
North Dakota	49	3-5	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Montana	23	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Idaho	23	3	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Wyoming	15	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Colorado	60	3-5	El.		Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	El.	El.	El.	El.	App.	App.	App.
New Mexico	26	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Arizona	13	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Utah	27	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Nevada	15	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
California*	58	3-7	El.		El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Oregon	34	2			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.
Washington	38	3			El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	El.	App.	App.	App.

a. Cities. b. Parishes. c. 3 county commissioners; 7 members in the county councils. El., an elective county office. a, a county office in some counties. App., an appointive county office., duties performed by some other officer. dist., elected or appointed for district smaller than a county. Var., number varies in different counties. Dist., elected or appointed for district larger than a county. * In Los Angeles county, the most populous county in California, the short "ballot" has been adopted. The only county officers hereafter to be elected by popular vote are the board of supervisors, sheriff, district attorney, and assessor. All others are to be appointed by the supervisors, the sheriff, or the superior court.

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AMENDMENTS TO STATE CONSTITUTIONS

The short titles of the constitutional amendments submitted to the people of the various states during 1912 are given below. Most of the important amendments are discussed in detail in other departments of the YEAR BOOK. Complete references will be found in Index entries under the names of states.

Alabama.—Submitted Nov. 5:

Amending the constitution, authorizing the legislature to place the county officers of Jefferson County on a salary instead of a fee basis. Adopted, 62,417 to 15,886.

Arizona.—Submitted Nov. 5:

Amending Art. II by adding Sec. 34, granting to the state and municipal corporations the right to engage in industrial pursuits. Adopted, 14,928 to 3,602.

Amending Art. VII, Sec. 2 and 15, granting to women the right to vote. Adopted, 13,452 to 6,202.

Amending Art. VIII, Sec. 1, extending the recall to all public officers of the state, including judges. Adopted, 16,272 to 3,491.

Amending Art. IX, Sec. 8, regulating the debt limit of counties, school districts, cities and towns. Adopted, 15,857 to 2,682.

Amending Art. IX, Sec. 11, relating to the method and mode of assessing, equalizing and levying taxes in the state. Adopted, 15,967 to 2,283.

Arkansas.—Submitted at a state election on Sept. 9:

Amending Art. V, Sec. 16, as to the compensation of members of the legislature. Adopted.

Amending the constitution so as to disfranchise the negro. Defeated.

Amending the constitution, exempting cotton-factory capital from taxation for a period of seven years. Defeated.

Amending the constitution to provide for the recall of all elective public officers. Proposed by initiative petition. Defeated.

Amending the constitution to give cities and towns having a population of over 1,000 authority to issue bonds for municipal improvements. Proposed by initiative petition. Defeated.

On Dec. 23 the state Supreme Court handed down a decision sustaining the contention of the attorney-general that only three constitutional amendments can be submitted to the voters at any one election. The last two amendments

above were declared void. Both received a majority of the votes cast on these propositions, but not a majority of all the votes cast at the election. This point also was in dispute, but was not passed upon by the court.

California.—Submitted Nov. 5:

Amending Art. IX, Sec. 7, to provide for a uniform series of text-books for use in elementary schools, and for their free distribution. Adopted, 343,443 to 171,486.

Amending Art. XI, Sec. 7, relating to the formation of consolidated city and county governments. Defeated, 174,076 for, 280,465 against.

Amending Art. XI, Sec. 16½, relating to the deposit of public funds of the state, counties or municipalities. Adopted, 307,199 to 128,411.

Amending Art. XIII by adding Sec. 8½, relating to taxation by municipalities, and establishing the principle of home rule in taxation. Defeated, 169,321 for, 243,959 against.

Colorado.—Submitted Nov. 5:

Amending Art. X, Sec. 15, concerning a state tax commission and county board of equalization. Defeated, 32,548 for, 40,012 against.

Amending Art. XI, Sec. 3, authorizing the state to issue bonds not exceeding \$10,000,000 for highway construction and improvement. Defeated, 36,636 for, 53,327 against.

Amending Art. XI, Sec. 6, enlarging the limitation upon county debt for highway and other purposes. Defeated, 29,741 for, 47,284 against.

Amending Art. XIV, Sec. 15, concerning fees and compensation of county, precinct and other officers. Defeated, 28,889 for, 41,622 against.

Amending Art. XV, Sec. 16, concerning mills and smelters. Defeated, 35,997 for, 37,953 against.

Amending Art. XXI, to provide for state-wide prohibition. Proposed by initiative petition. Defeated, 75,877 for, 116,774 against.

Amending Art. X by adding Sec. 17, levying a tax to create a special fund for the Immigration Bureau. Proposed by initiative petition. Defeated, 30,359 for, 54,272 against.

Amending Art. XX, Sec. 6, to grant a large measure of home rule to cities and towns. Proposed by initiative petition. Adopted, 49,596 to 44,778.

Amending the constitution by adding Art. XXI, to provide for the recall of all elective public officers. Proposed by initiative petition. Adopted, 53,620 to 39,564.

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Amending Art. XIX, Sec. 2, as to the manner of amending the state constitution. Proposed by initiative petition. Defeated, 33,413 for, 40,634 against.

Amending Art. VI, Sec. 31, as to contempt proceedings. Proposed by initiative petition. Defeated, 31,850 for, 41,855 against.

Amending Art. VI, Sec. 31, to establish a public-utilities court. Proposed by initiative petition. Defeated, 27,534 for, 51,820 against.

Amending Art. XX, Sec. 7, to provide for the wider use and control of schools. Proposed by initiative petition. Defeated, 38,318 for, 59,691 against.

Amending Art. VI, Sec. 1, to provide for the recall of decisions of the Supreme Court declaring laws unconstitutional. Proposed by initiative petition. Adopted, 55,416 to 40,891.

Connecticut.—Submitted Nov. 5:

Amending the constitution to provide for the succession of the lieutenant-governor to the power and authority of the governor on the death, disability or absence of the latter. Adopted, 29,778 to 4,770.

Amending the constitution to provide that the general assembly shall adjourn *sine die* not later than the first Wednesday after the first Monday in June following its organization. Adopted, 30,349 to 4,865.

Florida.—Submitted Nov. 5:

Amending Art. V, Sec. 42, providing for an additional circuit judge. Adopted, 18,051 to 3,057.

Amending Art. XII by adding Sec. 17, providing for the issue of bonds by special school districts for the use of public free schools. Adopted, 16,348 to 4,014.

An amendment providing for the initiative and referendum was passed by the legislature, but was not submitted (see II, *Popular Government*).

Georgia.—Submitted at a state election on Oct. 2:

Amending Art. VII, Sec. 2, requiring payment of taxes by corporations by Sept. 1 of each year. Adopted.

Amending Art. VII, Sec. 3, increasing the borrowing power of the state to supply deficiencies in revenue from \$200,000 to \$500,000. Adopted.

Amending Art. VIII, Sec. 1, providing a uniform system of common schools, but separate schools for the white and colored races. Adopted.

Amending the constitution, providing for the creation of Bleckley County. Adopted.

Amending the constitution, abolishing justice courts in certain cities. Adopted.

Submitted Nov. 5:

Amending the constitution, providing for the creation of Wheeler County. Adopted, 68,627 to 13,003.

Amending the constitution, authorizing the legislature to exempt from taxation for a period of one year farm products in the hands of the producer. Adopted, 75,836 to 10,577.

Amending the constitution, authorizing judges of the superior courts to grant charters in vacation. Adopted, 74,119 to 8,084.

Idaho.—Submitted Nov. 5:

Amending Art. III, Sec. 1, providing for the referendum (see II, *Popular Government and Current Politics*). Adopted, 43,658 to 13,490.

Amending Art. III, Sec. 1, providing for the initiative (*ibid.*). Adopted, 88,918 to 15,195.

Amending Art. VIII, Sec. 1, limiting the bonded indebtedness of the state, with certain exclusions, to \$2,000,000. Adopted, 31,712 to 18,083.

Amending Art. III, Sec. 2, providing that the state senate shall consist of one member from each county, and limiting the house of representatives to three times the number of senators. Adopted, 33,992 to 14,978.

Amending Art. IX, Sec. 2, establishing a state board of education. Adopted, 33,045 to 14,796.

Amending Art. XVIII, Sec. 6, (a) making the county treasurer *ex officio* tax collector. Adopted, 33,551 to 17,177; (b) authorizing county treasurers and *ex officio* tax collectors to employ deputies and clerical assistance. Adopted, 30,932 to 18,171.

Adding to Art. VI a new section (6) providing for the recall of all public officers except judges (see II, *Popular Government and Current Politics*). Adopted, 37,875 to 13,469.

Repealing Art. XIII, Sec. 3, which confines the labor of convicts in the state prison to the prison grounds. Adopted, 33,908 to 17,876.

Indiana.—The new constitution proposed by the legislature in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 153) was not submitted to the people in 1912. The State Supreme Court on July 5 affirmed an earlier judgment of the Marion County Circuit Court, declaring unconstitutional the act approved by the governor March 4, 1911, providing for the submission of the new constitution to popular vote. An application for a rehearing was denied by the Supreme Court, Oct. 18, and on Nov. 26 the case was appealed to the U. S. Supreme Court.

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Kansas.—Submitted Nov. 5:

Amending Art. V by adding Sec. 8, extending the suffrage to women. Adopted.

Kentucky.—Passed by the legislature in 1912 and to be submitted to the people in 1913:

Amending the constitution to permit the employment of convict labor on public roads and bridges.

Amending Sec. 171, authorizing the legislature to classify property for purposes of taxation, and providing for a referendum to the people of any tax law enacted to this amended section.

Louisiana.—Submitted Nov. 5:

Amending the constitution as amended by Act 297 of the Acts of 1910, to extend the time for the organization of the steamship companies therein provided for until Jan. 1, 1916. Adopted, 27,539 to 20,420.

Amending the constitution to provide for the exemption from taxation for a period of ten years from the date of the completion of the amendment of all railroads or parts of railroads constructed subsequently to June 1, 1912. Defeated, 17,831 for, 29,073 against.

Amending the constitution to authorize parishes and self-taxing municipalities to exempt new industrial enterprises and also improved value from local taxation for a period not exceeding ten years. Defeated, 16,160 for, 35,206 against.

Amending the constitution to exempt from taxation for 20 years certain corporations organized to lend money on mortgages on country property. Adopted, 29,609 to 21,953.

Amending the constitution to exempt from taxation money in hand or on deposit. Defeated, 15,550 for, 34,187 against.

Amending the constitution to authorize parishes and municipalities by a referendum to their respective qualified electors to exempt from taxation an amount not to exceed \$2,000 to be deducted from the value of residences occupied by *bona fide* owners. Defeated, 16,258 for, 34,427 against.

Amending the constitution to provide for referendum to the people of each parish for the exemption of cities, incorporated towns or villages from taxes and licenses levied by parochial authorities for parochial purposes. Defeated, 15,701 for, 33,120 against.

Amending the constitution to exempt from taxation for ten years certain corporations constructing, owning and operating within the state a combined system of irrigation, navigation and hydro-electric power. Defeated, 23,792 for, 24,355 against.

Amending the constitution to exempt from taxation the legal reserve of life insurance companies. Adopted, 28,155 to 21,480.

Amending the constitution to reorganize and remodel the state's system of assessment and taxation. Defeated, 18,348 for, 40,551 against.

Amending Art. 46 to provide for the retirement or refunding of the state bonded indebtedness due Jan. 1, 1914. Defeated, 14,895 for, 34,140 against.

Amending Art. 109, relative to the organization and jurisdiction of the district courts. Adopted, 33,060 to 16,529.

Amending Art. 157, relative to the filling of vacancies in judicial offices in the Parish of Orleans. Adopted, 27,998 to 19,422.

Amending Art. 197 to exempt certain classes of voters from the operation of the clauses of the constitution prescribing educational and property qualifications for the suffrage. Adopted, 33,955 to 18,144.

Amending Art. 201, to permit women to hold any office connected with education and with institutions of charity and correction. Defeated, 18,779 for, 31,452 against.

Amending Art. 223, providing for the recall of all elective officials except judges. Defeated, 22,607 for, 29,852 against.

Amending Art. 281, relative to public improvement bonds of municipalities, parishes, and school, drainage, sewerage and other districts. Adopted, 29,623 to 18,554.

Amending Art. 291, relative to taxes for the construction and maintenance of public roads. Adopted, 32,703 to 17,151.

Amending Art. 303, relative to pensions for Confederate veterans. Adopted, 43,938 to 13,049.

Maine.—Submitted Nov. 5:

Amending Art. IX by adding Sec. 17, authorizing the state to issue bonds for highways in amount not exceeding \$2,000,000. Adopted, 80,619 to 21,454.

Massachusetts.—Submitted Nov. 5:

Amending the constitution to authorize the general court to prescribe for the taxation of wild or forest lands. Adopted, 200,819 to 70,923.

Amending Art. III of the amendments to the constitution, disqualifying from voting persons convicted of corrupt practices in respect to elections. Adopted, 208,492 to 85,689.

Michigan.—Submitted Nov. 5:

Amending Art. III, Sec. 1, conferring upon women the right to vote. Defeated by 760 majority.

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Amending Art. VIII, Sec. 21, allowing the electors of a city or a village to frame, adopt, and amend its charter. Adopted by 147,382 majority.

Minnesota.—Submitted Nov. 5 (required majority of those voting at election):

Amending Art. IV, Sec. 2, relating to the number of members of the senate and house of representatives and the basis of apportionment thereof. Defeated, 122,457 for, 77,187 against.

Amending Art. IV, Sec. 36, allowing cities and villages to frame their own charters, and classifying cities. Defeated, 157,086 for, 41,977 against.

Amending Art. VII, Sec. 7, providing for an educational and professional qualification for county superintendent of schools. Defeated, 167,983 for, 86,584 against.

Amending Art. VIII, Sec. 6, relating to the investment of school funds. Defeated, 168,440 for, 39,483 against.

Amending Art. IX, authorizing an acreage tax on lands listed with the county auditor for protection against hail and wind, and creating an insurance fund against damage to crops by hailstorms on such listed land (see XIV, *Public Finance*). Defeated, 145,173 for, 60,439 against.

Amending Art. IX, Sec. 16, authorizing the legislature to levy an annual tax for the purpose of constructing and improving roads and bridges. Adopted, 195,724 to 51,135.

Mississippi.—Submitted Nov. 5:

Amending Art. IV, Sec. 33, providing for the initiative and referendum. Defeated, 25,153 for, 13,383 against.

Amending Art. IV, Sec. 56, changing the style of bills. Defeated.

Amending Sec. 31 so that nine or more jurors in civil suits may agree on a verdict and return it as the verdict of the jury. Defeated, 28,964 for, 14,255 against.

Missouri.—Submitted Nov. 5:

Amending Art. XI, Sec. 1, authorizing free public schools for persons between five and six and over 20 years of age. Defeated, 207,298 for, 367,032 against.

Amending the constitution to permit the county of St. Louis to increase its debt for the purpose of constructing sewers or buying waterworks. Defeated, 140,611 for, 402,473 against.

Amending Art. X, Sec. 11, increasing the rates of taxation of certain municipalities. Defeated, 121,794 for, 401,918 against.

Amending Art. VIII, Sec. 2, fixing the time a citizen must have resided in the state and county before being entitled to vote. Defeated, 172,140 for, 378,268 against.

Amending the constitution to provide for the registration of voters in all counties of more than 50,000 inhabitants adjoining a city having a population of 300,000 or more. Defeated, 151,694 for, 385,698 against.

Amending the constitution, providing for raising all revenue by taxes on land, inheritances and franchises. Proposed by initiative petition. Defeated, 86,647 for, 508,137 against.

Amending the constitution, abolishing the state board of equalization and providing for the appointment of a state tax commission. Proposed by initiative petition. Defeated, 96,911 for, 475,151 against.

Amending the constitution, regarding the conduct and investigation of elections. Proposed by initiative petition. Defeated, 197,643 for, 348,495 against.

Amending the constitution, authorizing a state tax for support of education. Proposed by initiative petition. Defeated, 154,952 for, 401,843 against.

Nebraska.—Submitted Nov. 5:

Amending Art. III, Sec. 1, providing for the initiative and referendum. Adopted, 189,200 to 15,315.

Amending Art. III, Sec. 4, as to the term of office and compensation of the members of the legislature. Adopted, 173,225 to 26,355.

Amending Art. V, Sec. 19, creating a board of commissioners of state institutions. Adopted, 174,939 to 25,439.

Amending Art. VI, Sec. 5, as to the number and terms of office of Supreme Court judges. Adopted, 174,151 to 25,048.

Amending Art. XVI, Sec. 13, providing cities of more than 5,000 inhabitants to frame their own charters (see VII, *Municipal Government*). Adopted, 164,579 to 32,041.

Nevada.—Submitted Nov. 5:

Amending Art. XIX by adding Sec. 3, providing for the initiative and referendum. Adopted, 9,956 to 1,027.

Amending Art. II by adding Sec. 9, authorizing the recall of public officers. Adopted, 9,636 to 1,173.

Amending Art. XI, Sec. 8, appropriating certain revenues for educational purposes. Adopted, 8,418 to 1,683.

Amending Art. I, Sec. 8, as to indictments in criminal cases. Adopted, 8,259 to 1,504.

Amending Art. XV, Sec. 3, declaring duellists ineligible to any office, and

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females eligible to certain offices. Adopted, 8,603 to 2,241.

New Hampshire.—A Constitutional Convention, authorized by popular vote in November, 1911, met in the spring. It proposed 12 amendments to the constitution, which were submitted to the people Nov. 5. Only four were adopted (7, 8, 10 and 11, below), the constitution requiring a two-thirds majority. The amendments and the popular votes were as follows:

1. Increasing the Senate to 36 members, and dividing the state into senatorial districts. Defeated, 19,443 for, 13,931 against.

2. Making 600 inhabitants necessary to the election of one representative and 2,400 inhabitants necessary for two representatives and 1,800 necessary for each additional representative, with certain exceptions. Defeated, 21,399 for, 10,952 against.

3. Empowering the legislature to specially assess, rate and tax growing wood and timber and money at interest, including money in savings banks, and to impose and levy taxes on incomes from stock of foreign corporations and foreign voluntary associations and money at interest. Defeated, 25,108 for, 12,636 against.

4. Providing that taxes assessed upon the passing of property by will or inheritance or in contemplation of death may be graded and rated in accordance with the amount of property passing and with the degree of relationship between the beneficiary and the person from whom it passes. Defeated, 18,432 for, 9,699 against.

5. Empowering the legislature to impose a tax upon the incomes of public-service corporations and voluntary associations. Defeated, 19,200 for, 10,151 against.

6. Amending the Bill of Rights by striking out the words "rightly grounded on evangelical principles" and the word "Protestant." Defeated, 16,555 for, 14,315 against.

7. Providing that no person shall have the right to vote or be eligible for office who shall have been convicted of treason, bribery or wilful violation of election laws, with the right to the Supreme Court to restore such privileges. Adopted, 22,388 for, 8,322 against.

8. Having the governor, councilors and senators elected by plurality instead of majority vote. Adopted, 21,120 for, 9,801 against.

9. Amending the Bill of Rights by striking out the provision that pensions

shall not be granted for more than one year at a time. Defeated, 16,708 for, 11,440 against.

10. Empowering the legislature to give police courts jurisdiction to try and determine, subject to the right of appeal and trial by jury, criminal causes wherein the punishment is less than imprisonment in the state prison. Adopted, 18,606 for, 8,291 against.

11. Requiring that the legislature, in dividing the state into councilor districts, shall be governed by the population. Adopted, 19,196 for, 6,901 against.

12. Giving the governor authority to approve or disapprove any separate appropriation contained in any bill or resolution. Defeated, 17,942 for, 9,325 against.

New York.—Submitted Nov. 5:

Amending the constitution to permit the issue of bonds not exceeding \$50,000,000 in amount for the construction of state and county highways. Adopted, 657,548 to 281,265.

North Dakota.—Submitted Nov. 5:

Amending the constitution to authorize the legislature to provide for the erection and operation of one or more grain elevators in the states of Minnesota or Wisconsin, or both. Adopted, 56,488 to 18,864.

Amending Art. IX, Sec. 158, relating to the sale of land. Adopted, 47,717 to 22,871.

Amending Sec. 91, relating to the term of office of judges of the Supreme Court. Defeated, 27,892 for, 42,415 against.

Ohio.—The fourth Constitutional Convention of the state of Ohio, authorized by popular vote at the November elections of 1910, assembled at Columbus, Jan. 9, 1912, under the presidency of Rev. Herbert S. Bigelow, of Cincinnati. It was composed of 119 delegates, representing 88 counties, of whom 61 were Democrats, 48 Republicans, three Socialists, and three independent. The convention was in session for 82 days. It dealt, during that time, with 340 proposed amendments to the constitution and 162 resolutions, a total of 502 questions. On its adjournment on June 1 it had agreed on 41 amendments to the constitution, radically altering the existing instrument and practically establishing a new constitution. The more important of the proposed amendments are dis-

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cussed in detail in other departments of the YEAR BOOK (see II, *Popular Government and Current Politics*; XIV, *Public Finance*; XVII, *Labor Legislation*, etc.; for complete references, see Index).

The proposals of the Constitutional Convention were submitted to the people at a special election held Sept. 3. Thirty-three were adopted and eight rejected. The amendments are given in brief below, together with the result of the popular vote in each case:

Amending Art. I, Sec. 5, providing that in civil cases laws may be passed to authorize the rendering of a verdict by three-fourths of the jury. Adopted, 345,686 to 203,953.

Amending Art. I, Sec. 9, providing that persons convicted of crimes heretofore punishable by death shall be punished by imprisonment in the penitentiary during life. Defeated, 258,706 for, 303,246 against.

Amending Art. I, Sec. 10, allowing provisions to be made by law for the taking of the deposition of any witness whose attendance cannot be had, and providing that the failure of the accused to testify may be considered by the Court and jury and made the subject of comment by counsel. Adopted, 291,717 to 227,547.

Amending Art. I, Sec. 16, providing that suits may be brought against the state in such courts and in such manner as may be provided by law. Adopted, 306,764 to 216,634.

Amending Art. I, Sec. 19a, providing that the amount of damages recoverable by civil action for death caused by wrongful act, neglect or default of another shall not be limited by law. Adopted, 355,605 to 195,216.

Amending Art. II, Sec. 1, providing for the initiative and referendum. Adopted, 312,692 to 231,312.

Amending Art. II, Sec. 8, authorizing the legislature to enforce the attendance and testimony of witnesses to obtain information affecting legislative action, or with reference to any alleged breach of its privileges or misconduct of its members. Adopted, 348,779 to 175,337. In effect Oct. 1, 1912.

Amending Art. II, Sec. 16, allowing the repassage of bills over the governor's veto by a three-fifths majority, instead of two-thirds as at present. Adopted, 282,412 to 254,186.

Amending Art. II, Sec. 33, providing that laws may be passed to secure to mechanics, builders, etc., their just dues by direct lien upon property upon which they have bestowed labor or furnished material. Adopted, 278,582 to 242,385.

Amending Art. II, Sec. 34, providing that laws may be passed regulating the hours of labor, establishing a minimum wage and providing for the comfort, health, safety and general welfare of employees. Adopted, 353,588 to 189,728.

Amending Art. II, Sec. 35, providing that for the compensation to workmen and their dependents laws may be passed establishing a state fund to be created by compulsory contribution thereto by employers, and taking away any or all rights of action or defense from employees and employers; and establishing a board which may be empowered to classify occupations, fix rates of contribution to such fund, distribute the same, and determine all rights of claimants thereto. Adopted, 321,558 to 211,772.

Amending Art. II, Sec. 36, authorizing the passage of laws to encourage forestry and to provide for the conservation of the natural resources of the state. Adopted, 318,192 to 191,893.

Amending Art. II, Sec. 37, providing that, except in cases of extraordinary emergency, not to exceed eight hours shall constitute a day's work, and not exceeding 48 hours a week's work for workmen engaged on any public work. Adopted, 333,307 to 232,898.

Amending Art. II, Sec. 38, providing for the prompt removal from office of all officers for any misconduct involving moral turpitude or for other cause provided by law. Adopted, 347,333 to 185,981.

Amending Art. II, Sec. 39, providing that laws may be passed for the purpose of regulating expert testimony in criminal trials. Adopted, 336,987 to 185,408.

Amending Art. II, Sec. 40, giving the legislature the right to provide for a system of registering and guaranteeing land titles by the states or counties thereof. Adopted, 346,373 to 171,807.

Amending Art. II, Sec. 41, prohibiting contract labor and providing that all goods made by the state in penal institutions shall be marked "Prison Made." Adopted, 333,034 to 215,208.

Amending Art. III, Sec. 8, limiting work of a special session to those subjects mentioned in governor's call or message. Adopted, 319,100 to 192,180.

Amending Art. IV, Secs. 1, 2, and 6, creating courts of appeals to take the place of the present circuit courts; giving courts of appeals final jurisdiction in all cases in which the death penalty, life imprisonment or constitutional questions are not involved; increasing the number of Supreme Court judges from six to seven and creating the office of chief justice, who is to be elected by the people; providing for "one trial and

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one review," except in chancery cases. Adopted, 264,922 to 244,375.

Amending Art. IV, Secs. 3, 7, 12, and 15, abolishing common pleas districts and giving each county at least one resident judge. Adopted, 301,891 to 223,287.

Amending Art. IV, Sec. 9, eliminating jurisdiction of justices of the peace in townships having municipal courts with like jurisdiction. Adopted, 264,832 to 252,936. (Secs. 1, 2, and 6 of this Article having been adopted [see above], Sec. 9 is repealed and the foregoing amendment has no effect.)

Amending Art. IV, Sec. 21, providing that no injunction shall be issued in labor disputes except to protect life and property; and persons charged in contempt proceedings with violating such an injunction shall be entitled to trial by jury. Defeated, 240,896 for, 257,302 against.

Amending Art. V, Sec. 1, giving women equal suffrage. Defeated, 249,420 for, 336,875 against.

Amending Art. V, Sec. 1, making negro suffrage constitutional by changing the words "white male citizen" to "male citizen." Defeated, 242,735 for, 265,693 against. (If the woman's-suffrage amendment had been adopted, this amendment was to have been void.)

Amending Art. V, Sec. 2, permitting the use of voting machines. Defeated, 242,342 for, 288,652 against.

Amending Art. V, Sec. 7, providing for direct primaries, presidential-preference primaries and the election of U. S. senators by direct vote of the people. Adopted, 349,801 to 183,112.

Amending Art. VI, Sec. 3, providing for the organization, administration and control of the public-school system of the state. Adopted, 298,460 to 213,337.

Amending Art. VI, Sec. 4, creating the office of superintendent of public instruction to replace the state commission of common schools. Adopted, 256,615 to 251,946. To take effect the second Monday of July, 1913.

Amending Art. VIII, Sec. 1, permitting the legislature to issue \$50,000,000 bonds (not more than \$10,000,000 in any one year) for inter-county wagon roads. Defeated, 272,564 for, 274,582 against.

Amending Art. VIII, Sec. 6, giving the right to insure public buildings in mutual fire insurance companies. Adopted, 321,388 to 196,628.

Amending Art. VIII, Sec. 12, abolishing the state board of public works and providing for appointment of a superintendent by the governor. Adopted, 296,635 to 214,829.

Amending Art. XII, Secs. 1, 2, 6, 7, 8, 9, 10, and 11, continuing present sys-

tem of uniform rule in taxation, restoring future issues of public bonds to taxation, the passage of the law taxing incomes and inheritances. Adopted, 269,239 to 249,864.

Amending Art. XIII, Sec. 2, providing for the regulation of corporations and joint-stock companies and the sale of stocks and bonds. Adopted, 300,466 to 212,704.

Amending Art. XIII, Sec. 3, providing that stockholders of corporations authorized to receive money on deposit shall be held individually responsible for all contracts, debts and engagements of such corporations, to the extent of the amount of their stock therein, at the par value thereof, in addition to the amount invested in such shares. Adopted, 377,272 to 156,888.

Amending Art. XV, Sec. 2, permitting the state to do its own printing, or let the same by contract to the lowest responsible bidder. Adopted, 319,622 to 192,378.

Amending Art. XV, Sec. 4, permitting the appointment of women to positions in those departments and institutions established by the state or any political sub-division involving the interests and care of women and children. Defeated, 261,806 for, 284,370 against.

Amending Art. XV, Sec. 10, establishing compulsory civil service in all the state, city and county offices. Adopted, 306,767 to 204,580.

Amending Art. XV, Sec. 11, giving the legislature right to regulate the use of billboards. Defeated, 261,361 for, 262,440 against.

Amending Art. XVI, Secs. 1, 2, and 3, making a majority of those voting on constitutional amendments sufficient to carry same. Adopted, 271,827 to 246,687.

Amending Art. XVIII, Secs. 1 to 14, giving municipalities a wide measure of home rule. (See VII, *Municipal Government*.) Adopted, 301,861 to 215,120. In effect, Nov. 15, 1912.

A provision that except as otherwise specifically provided the several amendments referred to above shall take effect Jan. 1, 1913, and that all cases pending in the courts on Jan. 1, 1913, shall be heard and tried in the same manner and by the same procedure now authorized by law. Adopted, 275,062 to 213,979.

The establishment of a license system for traffic in intoxicating liquors, submitted as a separate question at the same election, was approved by a vote of 272,361 to 188,828.

Oklahoma.—Submitted at a special election on April 25:

Amending Art. IX, Sec. 9, as to railroads and transportation companies exercising power of eminent domain.

VI. STATE AND COUNTY GOVERNMENT

Proposed by initiative petition and submitted Nov. 5:

Amending Art. X by adding Sec. 81, empowering the legislature to levy certain taxes in aid of common schools. Adopted, 100,042 to 65,438.

Amending the constitution to declare Guthrie the state capital and seat of government. Defeated, 86,549 for, 103,106 against.

Oregon.—Submitted Nov. 5:

Amending Art V. Sec. 8, creating the office of lieutenant-governor. Defeated, 50,562 for, 61,644 against.

Amending Art. IX, Sec. 1, providing for a uniform rule of taxation. Defeated, 51,852 for, 56,671 against.

Amending Art. I, Sec. 32, providing for the classification of property for purposes of taxation. Defeated, 52,045 for, 54,488 against.

Amending Art. IX, Sec. 1a, repealing all except the clause prohibiting head and poll taxes and substituting a provision prohibiting the declaration of an emergency clause in any act regulating taxation and exemptions. Adopted, 63,881 to 47,150.

Amending Art. XVII, Sec. 1, as to the adoption of constitutional amendments. Defeated, 32,934 for, 70,325 against.

Amending Art. XI, Sec. 3, making stockholders in banking corporations liable for the benefit of depositors to an amount equal to the par value of their shares. Adopted, 82,981 to 21,738.

Amending Art. II, Sec. 2, extending the right of suffrage to women. Proposed by initiative petition. Adopted, 61,265 to 57,104.

Amending Art. IV, Sec. 1, as to the adoption of constitutional amendments and initiated measures, and the rejection of measures submitted to the people. Proposed by initiative petition. Defeated, 35,721 for, 68,861 against.

Amending Art. XI, Sec. 7, allowing the state to become bonded for the construction and maintenance of highways up to two per cent. of the assessed valuation. Proposed by initiative petition. Adopted, 59,452 to 48,447.

Amending Art. XI, Sec. 10, limiting the bonded indebtedness of counties for road purposes to two per cent. of the assessed valuation. Proposed by initiative petition. Defeated, 27,258 for, 48,858 against.

Amending Art. XI, Sec. 10, empowering the court of any county to issue bonds for road purposes when authorized by a majority of the voters, and repealing all acts or amendments in conflict with this amendment. Proposed by initiative petition. Defeated, 88,568 for, 63,481 against.

Amending Art. IX by adding Sec. 16, providing for the taxation of incomes. Proposed by initiative petition. Defeated, 52,702 for, 52,948 against.

Amending Art. IV, abolishing the state senate and otherwise reorganizing the legislature (see II, *Popular Government and Current Politics*). Proposed by initiative petition. Defeated, 81,020 for, 71,179 against.

Amending Art. IX, Sec. 2, imposing additional taxation on franchises, land, and natural resources in excess of \$10,000 under one ownership, and exempting personal property from taxation. Defeated, 31,584 for, 82,015 against.

Rhode Island.—The legislature passed an amendment to the constitution providing for the holding of a constitutional convention in 1915, with the addition that such a convention shall be held every ten years thereafter if the people so desire.

South Carolina.—Submitted Nov. 5:

Amending Art. VIII, Sec. 7, to exempt bonded debt incurred by the town of Bishopville, Lee County, from certain limitations. Adopted, 11,856 to 8,659.

Amending Art. X by adding Sec. 14a, empowering the cities of Charleston and Beaufort to assess abutting property for permanent improvement. Adopted, 11,618 to 7,871.

Amending Art. X by adding Sec. 15, empowering the towns of Gaffney and Woodruff and the cities of Chester and Georgetown to assess abutting property for permanent improvement. Adopted, 10,495 to 7,435.

Utah.—Submitted Nov. 5:

Amending Art. VI, Sec. 9, relating to the compensation of members of the legislature. Defeated, 6,056 for, 30,113 against.

Amending Art. XIV, Sec. 4, permitting the fixing of the limit of indebtedness for counties, cities, towns and school districts. Defeated, 9,122 for, 25,004 against.

Amending Art. XI, Sec. 1, providing for the creation of new counties. Defeated, 12,966 for, 22,132 against.

Amending Art. VII, Sec. 17, permitting the fixing of the duties of state auditor and state treasurer. Defeated, 13,041 for, 21,150 against.

Amending Art. XIII, Sec. 2, relating to the general taxation of property. Defeated, 6,415 for, 25,684 against.

Amending Art. XIII, Sec. 8, relating to the classification of property for the purposes of taxation. Defeated, 6,098 for, 25,737 against.

VI. STATE AND COUNTY GOVERNMENT

Amending Art. XIII, Sec. 4, relating to the taxation of mines. Defeated, 8,919 for, 23,440 against.

Amending Art. XIII, Sec. 11, relating to the duties of state and county boards of equalization. Defeated, 6,944 for, 24,863 against.

Virginia.—Submitted Nov. 5:

Amending Art. VIII, Sec. 117, relating to the forms of government for cities and towns and the classification of cities. Adopted, 60,176 to 16,202.

Amending Art. VIII, Sec. 119, relating to the election of commissioners of revenue in cities. Adopted, 58,496 to 20,900.

Amending Art. VIII, Sec. 120, relating to the election of treasurers in cities. Adopted, 57,884 to 20,738.

Washington.—Submitted Nov. 5:

Amending Art. XI, Sec. 7, removing the prohibition against county officers, except county treasurers, holding office for more than two terms in succession. Defeated, 67,717 for, 83,138 against.

Amending Art. II, Sec. 1, providing for the initiative and referendum. Adopted, 110,110 to 43,905.

Adding to Art. I two sections (33 and 34) providing for the recall of all elective public officers except judges. Adopted, 112,321 to 46,372.

Amending Art. II, by striking out

Sec. 31, relative to the time when laws take effect. Adopted, 79,940 to 47,978.

West Virginia.—Submitted Nov. 5:

Amending Art. VI by striking out Sec. 46 and substituting therefor a section prohibiting the manufacture and sale of intoxicating liquors (see XVI, *The Liquor Traffic and Problem*). Adopted, 164,945 to 72,603.

Wisconsin.—Submitted Nov. 5:

Amending the constitution, extending the suffrage to women. Defeated, 185,545 for, 227,024 against.

Amending the constitution, extending from 20 to 50 years the time within which debts incurred in the acquisition of lands by cities or counties having more than 150,000 population must be paid. Adopted, 46,369 to 34,975.

Amending the constitution, authorizing the state and cities to acquire lands for public and municipal purposes. Adopted, 48,424 to 33,931.

Amending the constitution, relative to the payment of the salaries of Supreme Court and Circuit Court judges. Adopted, 44,855 to 34,865.

Wyoming.—Submitted Nov. 5:

Amending Art. III, Sec. 1, providing for the initiative and referendum. Defeated, 20,579 for, 3,446 against.

THE LOS ANGELES COUNTY CHARTER

CLINTON ROGERS WOODRUFF

Los Angeles County (California) is the first county in the country to draft and adopt its own charter. This it was able to do under the constitutional amendment adopted a year ago. The first draft was prepared by the freeholders' commission and was submitted to the voters for ratification on Nov. 5, 1912. Some of the new features which the new law introduces are:

A commission form of government, in the form of a board of supervisors of five members, in absolute control of county affairs.

The appointment by this board of all county officers with the exception of assessor, auditor and district attorney.

Provision for the consolidation of duties of county and municipal officers.

The creation of new officers, including corporation counsel, a purchasing agent, superintendent of county charities and a public defender.

The appointment of three persons by the supervisors to act as civil service commissioners.

The establishment of the probation system, by which applicants for positions shall have a trial as to their efficiency for six months before being regularly employed.

Prohibition of the activity of office holders in political matters.

Prohibition of discrimination against women on account of sex.

Prohibition of night work for women and child labor in any department of the county.

The establishment of an eight-hour day for all county employees and a living wage.

An arbitration system for the settlement of labor disputes.

Prohibition of convict contract labor.

The supervisors are relieved of the duty of caring for roads in their respective districts. The office of road commissioner is created, and he will have charge of the roads throughout the entire county, subject to the general direction of the board of supervisors, thus placing the entire road system under one management.

VII. MUNICIPAL GOVERNMENT

CLINTON ROGERS WOODRUFF

MUNICIPAL HOME RULE

California.—So far as the larger cities are concerned, municipal home rule has been the established constitutional policy of California for years. In October, 1911, this policy was extended to all cities of 5,000 and over and to the counties. To-day the cities of that state can determine their own form of municipal machinery and their own local policy. All new charters, before they become operative, must be submitted to the state legislature for approval, but there is no case on record where this approval has been withheld.

Ohio.—On Sept. 3, 1912, the voters of Ohio approved an amendment to the constitution establishing municipal home rule. In brief the amendment provides:

1. Municipal corporations are divided into cities and villages; those having a population of 5,000 or more are cities; all others are villages.

2. The city or village may determine the form of its government in either of three ways:

(a) A municipality may adopt its own charter by electing a commission of 15 to frame the charter and submit it to the people for ratification.

(b) The legislature may pass a general or special act which a city or village may adopt by a majority vote.

(c) The legislature shall by general law provide for the government of cities . . . laws which will automatically take effect in all cities or villages which do not take steps to secure their own charters in the manner indicated above in "a" and "b."

3. Under any form of municipal government municipalities shall have authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary and other regulations as are not in conflict with general laws.

4. Municipalities may acquire, construct, own, lease, operate public utilities and may issue mortgage bonds therefor beyond the general limit of bonded indebtedness prescribed by law, but such mortgage bonds shall be a lien only on the property and revenues of the public utility itself.

5. Municipalities may exercise the right of excess condemnation in appropriating property, provided the bonds issued to pay for such excess shall be a lien only upon the property acquired for the improvement and the excess.

6. The general assembly is given authority to limit the power of municipalities to levy taxes and incur debts for local purposes; to acquire uniform reports from cities as to their financial condition; and to provide for the examination of the accounts of all municipalities or of public utilities operated by the municipality.

Michigan.—Ever since its new constitution was adopted, the people of Michigan have been in a peculiar position so far as municipal home rule is concerned, by reason of the interpretation of the municipal provisions by the Supreme Court. Two years ago when the first decision was handed down and the legislative committees on cities and villages were urged that the only safe and sane way to accomplish the desired result—the granting to the cities the right to amend existing charters without holding a charter revision convention—would be by amending the constitution, they felt satisfied that by the passage of an amendment to the home-rule bill the same result could be accomplished.

This amendment, however, was in turn declared unconstitutional by the Supreme Court, and cities left in the same position, in that they would

be compelled to elect a charter commission for the purpose of revising or readopting their present charters before they could attempt to amend them. Governor Osborn had called a special session of the legislature to pass a presidential primary and such other matters of public moment as might require attention. The League of Michigan Municipalities urged both houses to adopt a resolution submitting to the electors at the November election a constitutional amendment allowing cities to amend existing charters piecemeal without the necessity of having a general revision. Therefore with the backing of the attorney-general and the concentrated efforts of all parties concerned, the legislature passed the following amendment, which was adopted by the electors on Nov. 5:

Under such general laws the electors of each city and village shall have power and authority to frame, adopt and amend its charter and to amend an existing charter of a city or village heretofore granted or passed by the legislature for the government of city or village and through its legally constituted authority to pass all laws and ordinances relating to its municipal concerns, subject to the constitution and general laws of the state.

New York cities are in as great need of home rule as any others, but until quite recently seemed to be in a most hopeless state. Within the year, however, the Municipal Government Association of New York State has been organized and a strenuous movement is now on foot to secure home rule for the cities, counties and villages of the state of New York by the grant of adequate powers of local self-government.

Wisconsin cities will not be able to secure home rule for another two years as the Supreme Court of the state has declared the home-rule bill of 1911 unconstitutional. In this decision the court held that the legislature had no power to delegate its authority to cities, and that this right is reserved exclusively to the legislature. The effect of the decision is that Wisconsin cities will have to wait until another legislature has ratified the proposed amendment to the state constitution, granting home

rule to cities, and until this action is passed upon and approved by the electors in 1914.

Virginia.—Home rule is an issue in Virginia. An amendment to the constitution providing for what is called "home rule" was approved by the voters on Nov. 5. It was opposed, however, most vigorously by advocates for commission government, who object to the provision that while a city may adopt a charter, "it must be such as the general assembly may deem best."

Minnesota.—At the last session of the legislature a constitutional amendment was submitted to the voters of the state, which was defeated in November, giving a majority of the voters a right to adopt a new charter or to amend the old. It gives broader powers to the 15 freeholders appointed by the courts, who make up the charter commission, and authorize any form of government for a city of the state that does not violate the constitution. Formerly the constitution required that a city charter must provide for an elective mayor and a city council, and this was held by some technical lawyers to invalidate the commission-plan charters of the state.

Nebraska.—The legislature of 1911 submitted an amendment providing for municipal home rule in cities of more than 5,000 inhabitants. Any such city is authorized to frame its own charter, "consistent with and subject to the constitution and laws of the state," by means of a charter convention of 15 freeholders elected at large by the voters of the city. The charter so framed is to go into effect 60 days after being submitted to the electors and ratified by a majority of those voting thereon. Either the calling of a charter convention, or amendments to a home-rule charter may be proposed by the city council or by a petition of five per cent. of the city electors, but must be submitted to the electors and ratified by a majority of those voting thereon. In submitting any such charter of amendments any alternative article or section may be presented and voted on separately. The amendment was adopted at the November election.

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Texas.—A home-rule amendment was adopted in November. It provides as follows:

Cities having more than five thousand (5,000) inhabitants may, by a majority vote of the qualified voters of said city, at an election held for that purpose, adopt or amend their charters, subject to such limitations as may be prescribed by the legislature, and providing that no charter or any ordinance passed under said charter shall contain any provision inconsistent with the constitution of the state, or of the general laws enacted by the legislature of this state;

said cities may levy, assess and collect such taxes as may be authorized by law or by their charters; but no tax for any purpose shall ever be lawful for any one year which shall exceed two and one-half per cent. of the taxable property of such city, and no debt shall ever be created by any city, unless at the same time provision be made to assess and collect annually a sufficient sum to pay interest thereon and creating a sinking fund of at least two per cent. thereon; and provided, further, that no city charter shall be altered, amended or repealed oftener than every two years.

COMMISSION GOVERNMENT

Adoption in 1912.—There is no apparent diminution of interest in this form of government. On Jan. 1, 1912, there were 207 cities in the United States operating under some form of commission government. That number now, according to the lists of the National Municipal League, has been increased to 253. The movement's greatest development continues in the Central West. The northwestern group of states (Minnesota, Iowa, South Dakota, North Dakota, Kansas, Nebraska, Wyoming, and Montana) leads, with 64 cities; and the southwestern group (Colorado, Oklahoma, Texas, and New Mexico) follows with 59. The other groups are as follows: North Central, 39; Pacific and Mountain, 32; South Central, 27; Southern, 14; Middle, 15; New England, 7. These are the figures for Dec. 1, 1912.

In a number of states like New York and Pennsylvania there are vigorous efforts to secure enabling legislation, so that cities can avail themselves of the new form; and 1913 bids fair to see a very material addition to the list. Already the larger cities are beginning seriously to consider the problem. St. Paul, with its population of 205,000, has voted to inaugurate the new plan on Jan. 1, 1914; New Orleans secured permission to adopt the form and did so; and Los Angeles drafted a commission charter. To date, no city that has adopted the form has abandoned it.

The records of those cities which have had two or more years of experience have been uniformly en-

couraging; although it must be recognized that in a number of communities there is more or less disappointment because the character of men selected as commissioners has not been higher. There is a general recognition of the fact that the present character of officials in commission governed cities is very much higher than that prevailing under the older forms; but the electors are beginning to see that they are responsible, in the last analysis, and not the form of government, for the character of officials selected.

The National Municipal League has a committee studying city government by commission, which has reported that this form is a relative success as compared with the older forms, because it is more sensitive to public opinion (see *National Municipal Review*, Vol. I, page 40).

The Sumter Plan.—Numerous attempts have been made to develop and improve the commission form of government. The latest of these is the Sumter (S. C.) plan of city government, adopted June 11, 1912, which is a combination of some of the best features of the commission form with the city-manager idea. In the last session of the South Carolina legislature a general act was passed granting to the cities of the state the right to vote upon the commission form of government. This act provides for cities of various classes as in the New Jersey act. For cities of less than 10,000 inhabitants the act provided for three commissioners at salaries of \$1,200 for the mayor, and \$1,000 for each of the

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two councilmen. They are to hold office for four years. Of the two councilmen elected the one receiving the highest number of votes holds office for four years, and the next highest for two years, so that there shall be an election every two years thereafter. Provisions for the initiative, referendum, and recall are included. The "Columbia bill" embodying the general features of the Des Moines act was amended to provide for a special plan for Sumter. This amendment, which requires the commission to engage a city manager, empowers the commission to employ a person (male) of sound discretion and of good moral character not of their number at such salary and upon such terms as they may decide, who shall be subject to such rules and regulations as may be provided by the councilmen. It also further provides that under this form the mayor shall be paid an annual salary of only \$300 and the councilmen \$200 each.

This act with the city manager form was adopted at a special election on June 11, 1912, and the commissioners provided for thereunder were elected Aug. 13. The act was proposed and supported by the Chamber of Commerce, which includes in its membership practically every business in the city. It was drawn by a special committee of that body. The salaries of the commission were purposely made small, the intention being to copy the usual system employed by business corporations.

At the Los Angeles meeting of the National Municipal League the idea of an expert business manager or commission elected mayor was strongly urged and found many advocates. The same idea is being agitated in Pittsburgh, Penn. Sentiment in this direction, which is called by some the "burgomaster" plan, is gradually forming.

Indiana Business Plan.—Beginning with the Fort Wayne Commercial Club and extending to the federated commercial clubs of the state, the Fort Wayne or "business system of government for Indiana cities" is making rapid progress in public esteem. This plan divides the powers of the city government into two

CITIES ADOPTING COMMISSION GOVERNMENT IN 1912

	Population, 1912.
Ada, Okla.	4,349
Arkansas City, Kan.	7,508
Atlantic City, N. J.	46,150
Bishop, Texas ....	....
Boise, Idaho.	17,358
Collinsville, Okla.	1,324
Deal Beach, N. J.	273
Durango, Colo.	4,686
Everett, Wash.	24,814
Franklin, Texas ....	....
Frankston, Texas ....	....
Gulfport, Miss.	6,386
Harvey, Ill.	7,227
Holton, Kan.	2,842
Hutley, N. J.	6,009
Jackson, Miss.	21,262
Janesville, Wis.	13,894
Junction City, Kan.	5,598
Lincoln, Neb.	43,973
Long Branch, N. J.	13,298
Longport, N. J.	118
Madison, S. D.	3,137
Manhattan, Kan.	5,722
Menominee, Wis.	5,036
Meridian, Miss.	23,285
Nebraska City, Neb.	5,488
New Iberia, La.	7,499
New Orleans, La.	339,075
Olathe, Kan.	3,272
Oklmulgee, Okla.	4,176
Parsons, Kan.	12,463
Polson, Mont. ....	....
Portage, Wis.	5,440
Rice Lake, Wis.	3,968
Ridgefield Park, N. J.	966
San Bernardino, Cal.	12,779
San Mateo, Cal.	4,384
Sheffield, Ala.	4,865
St. Paul, Minn.	214,744
Sumter, S. C. (city-manager plan)	8,109
Superior, Wis.	40,384
Tampa, Fla. (advisory vote only)	37,782 ✓
Tower, Minn. ....	....
Watertown, S. D.	7,010
Wildwood, N. J.	898
Willis, Texas. ....	....

general branches, the supervisory and the legislative-administrative. The people elect a board of councilors, the membership of which varies according to the class of the city, and this board of councilors then must select a mayor and a prescribed number of commissioners, including the board of administration, a body in which is vested the power to pass ordinances and the authority to execute the laws and administer all the business of the city. The mayor

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and each commissioner are to be the head and chief executive officer of a department of the city government. In brief, the board of councilors becomes the appointing power of the city, on the basis that for policy one must elect, and for efficiency one must appoint. This plan is very close to the board-of-directors plan which so widely prevails in private corporations. The entire control and management of the city government under this business plan rests with the mayor and four commissioners, who appoint all officials and employees under the civil service rules. The board of councilors cannot appoint a commissioner from its own ranks.

In this board of councilors resides the authority to review and to approve or veto all legislative acts of the board of administration. It also has authority to remove any or all of the board of administration for cause. The board is directly accountable to the people, not only for its

own official conduct, but for the official conduct of the entire government. By the initiative it may be compelled to carry forward legislative measures desired by the people. By the referendum its acts or the acts of the board of administration may be approved and confirmed or condemned and set aside. By the recall it may be forced to expel from office the mayor or any commissioner or the entire board of administration, and it may itself be expelled, in part or in whole, from office. No ordinance conferring any public franchise or other grant upon any person, company or corporation can become valid or operative until the people shall have had an opportunity to vote upon it. The ward system of representation in councils is wiped out and the representative branch of the government is elected at large from the city. The merit system, under a board of civil-service commissioners, is established and maintained.

MUNICIPAL EFFICIENCY AND RESEARCH

Efficiency in Municipal Government.—Efficiency was the keynote of the annual meeting of the National Municipal League at Los Angeles, as it has been at various other meetings of municipal students and officials during the year. In a paper before the American Water Works Association, Harrington Emerson has defined and discussed at considerable length the principles of efficiency laid down in his book *The Twelve Principles of Efficiency* (The Engineering Magazine, 1911) as applied to waterworks. His paper may be taken as describing the principles of efficiency in municipal work generally. Mr. Emerson enumerates twelve principles, as follows:

General principles fall into two classes, the altruistic principles and the practical principles. The practical principles are those underlying scientific management; the altruistic principles are those underlying industrial righteousness. The highest efficiency depends on both righteousness and management.

The altruistic principles of efficiency are six: Ideals; common sense and

judgment; competent counsel; discipline; the fair deal; efficiency reward.

The practical principles are also six: records—immediate, reliable and adequate; planning and despatching; standards; standardized conditions; standardized operations; written standard-practice instructions.

New York's Efficiency Record System.—Records are by most efficiency experts regarded as of chief importance, hence the amount of time and labor bestowed upon them in those industries and in those public departments where efficiency is definitely sought after. As illustrating the place and value of efficiency records, we may cite the case of New York as described by Dr. Leonard Felix in the *National Municipal Review*. Under the efficiency record system which has been installed in the civil service of the city of New York, the supervising officer most closely in touch with the work of the employees is required to furnish quarterly a descriptive report upon the efficiency of the employees under his jurisdiction. In this report he divides his employees into three classes.

In the first class he places those who have performed their duties satisfactorily. In every office this class ought to include a large majority of the employees, and in the cases of these employees the reporting officer need give only their names and their titles. In the second class he places those whose work has been more than satisfactory—those who have distinguished themselves by marked intelligence and zeal in the performance of their duties. These employees are selected by the reporting officer, by establishing a standard of average efficiency among the subordinates under his jurisdiction and then picking out for special mention those employees whose special work has been distinctly superior to the grade of work performed by the majority of his employees. In the case of these superior employees, it is required that the reporting officer furnish, in addition to the name and the title of the employee, a specific statement of his reasons for considering his work above the average of his office force. The reason assigned by the reporting officer must give the particulars in which the employee's work excels that of the other employees under his jurisdiction. In the same manner the reporting officer places in a third class those whose work has been less than satisfactory or unsatisfactory. These are the employees whose work has been distinctly below that of the average of the department or bureau. For those who are placed in this unsatisfactory class reasons must also be assigned, giving the particulars of the unsatisfactory character of their work.

Promotions in each department are made by a board of promotion, consisting of at least three superior administrative officers of the department, designated by the appointing officer of the department subject to the approval of the municipal civil-service commission. In the actual administration of the efficiency record system the members of the board of promotion are generally the more important bureau chiefs or other supervisory administrative officers of the department, and the appointment is made by the head of the depart-

ment. This board of promotion holds a meeting quarterly for the purpose of considering the efficiency reports submitted by the rating officers of the department, and at these quarterly meetings it assigns definite ratings to all the employees subject to its jurisdiction. The board considers separately each of the reports submitted to it. It may at its discretion accept the reports as submitted or it may change the reports as they affect individual employees. If in the exercise of its discretion, however, it sees fit to change a report, the members of the board are required to state the reasons for this change in the minutes of the board of promotion.

The efficiency record books, the original quarterly reports to the promotion board, and the minutes of the promotion board's meetings are inspected at regular intervals by an examiner of the civil-service commission. This inspection not only affords an opportunity for the introduction of such additional safeguards as may be deemed necessary to protect the integrity of the records, but also presents an opportunity to the heads of the various departments to discuss the needs of the department from the point of view of its personnel with a representative of the civil-service commission, who can report to the commission such suggestions and recommendations of the heads of departments as seem to possess practical merit. A detailed report is submitted by the examiner after each departmental inspection.

Once each year a transcript of the marks entered in the efficiency record books of each department is sent to the civil-service commission and entered upon the efficiency record cards kept by the civil-service commission for each employee in the city service. These efficiency records are kept for all employees in the competitive class of the civil service, excepting the members of the uniformed police and fire-fighting forces. Furthermore, no efficiency records are kept by the civil-service commission for school-teachers, laborers and employees in the city service who are not subjected to examination. In every promotion examination the average

percentage of each candidate is determined by his percentage on his written examination and his percentage on his efficiency record and seniority. A weight of 50 per cent. is attached to the written examination and a weight of 50 per cent. is attached to the efficiency record and seniority. No candidate can have his name placed upon a promotion eligible list, however, unless he secures at least 70 per cent. in his written examination.

Chicago Civil Service.—Chicago has perhaps progressed further in developing its efficiency methods and records (as already described in the *AMERICAN YEAR BOOK*, 1911, p. 234) than any other American city. The Efficiency Bureau rendered signal assistance in the investigation of the Chicago police (see *Police*, *infra*), and has worked out a number of important details that are being utilized as precedents in other places.

The Efficiency Division has been engaged in a reclassification of all the clerical positions in the city service. In a circular which it issued in January, 1912, the civil-service commission set forth that the reclassification and regrading of positions in the city service do not alter the legal status of any of the employees filling positions in the service at the time of the reclassification and regrading; that is, the commission holds that it cannot confer upon the occupants of positions any rights except those which were obtained originally by virtue of examination and certification. It is proposed to hold a series of promotion examinations by which all employees now out of grade will be given an opportunity to obtain legal standing under the new classification.

New York Bureau of Municipal Research.—This bureau has published a record of its work since its organization in 1906 to the end of 1911, under the title "Six Years of Municipal Research for Greater New York." This explains the purposes and methods of the bureau and summarizes the results of its more important investigations, with a brief reference to similar work in other cities.

The work of the New York bureau has led to the establishment of sim-

ilar bureaus in Philadelphia, Cincinnati, Chicago, Milwaukee, and Memphis, and on a smaller scale in Boston, Baltimore, St. Paul and Atlanta. Agents of the New York bureau have made municipal research studies in St. Louis, Hoboken, Montclair, Boston, Buffalo, Pittsburgh, Rochester and Yonkers. A special fund has been raised for promoting efficient municipal accounting in American cities; and a detailed study of commission government, with plans for more efficient and progressive work was published this autumn (Henry Bruere, *The New City Government*, D. Appleton & Co.).

To develop further work along the lines of this bureau, a National Training School for Public Service (see this title, *infra*) was established in 1911, to be conducted by the bureau.

The Metz Fund for promoting efficient municipal accounting and reporting (see *AMERICAN YEAR BOOK*, 1911, p. 233) has thus far published pamphlets as follows:

"Outline of Municipal General Ledger, with Illustrative Financial Statements"; "Short Talks on Municipal Accounting and Reporting" (12 in all); and "Would a Budget Exhibit Help Your City?" It has in preparation a series of manuals for city officials, to be published by D. Appleton & Co.:

Budget-making Based on Present Practices in Cities Over 60,000 Inhabitants. Steps in budget-making from the determination of needs to authorization of allowances, noting particularly New York City's progressive steps since 1906.

Purchasing and Standardization. A handbook on scientific purchasing for city officials and suggestions for establishing standards for supplies and materials.

A Manual on Elementary Municipal Accounting. To be based on "Short Talks" now in course of publication.

Chicago Bureau of Public Efficiency.—The Chicago Bureau of Public Efficiency came into existence in August, 1910 (see *AMERICAN YEAR BOOK*, 1910, p. 245; 1911, p. 234). It was an indirect outgrowth of the Chicago Commission on City Expenditures, commonly known as the Merriam commission. When the Mer-

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riam commission, which confined its investigations to the expenditures of the city government, after about a year and a half of successful activity, was about to terminate its labors, it was felt that there should be some unofficial agency to continue the same general lines of investigation of county government and the administration of sanitary and park district board. The first director of the bureau was Herbert R. Sands, formerly connected with the New York Bureau of Municipal Research, who had been brought to Chicago to assist in the work of the Merriam commission. Mr. Sands remained as director until Jan. 1, 1912. He was succeeded by Harris S. Keeler, formerly legal counsel of the bureau.

During the period of its existence the bureau has issued 15 publications. In two instances these publications were of reports prepared by the Merriam commission, for the printing of which the city had failed to make provision. Three reports prepared and published by the bureau were based upon studies made by engineering experts, two relating to street paving and the third to electrolysis of water pipes. The most elaborate report issued is that relating to the park governments of Chicago. It represents more than a year's investigation by several members of the staff. Chicago has three large park districts, one in each division of the city, and seven smaller park districts, making ten in all. Each of these park districts constitutes an independent governing body, with its own tax-levying powers and its separate board of commissioners. The report was a detailed study of the activities of these bodies. Its most striking conclusion was that \$500,000 a year could be saved by the merging of all these park governments with the city, to effect which will require action by the legislature of the state. At the present time the bureau is concentrating its attention upon the county government, to the exclusion of practically all other lines of inquiry. It has published a report on budget making (AMERICAN YEAR BOOK, 1911, p. 236), and several reports on the administration of county fee offices.

The Milwaukee Bureau of Economy and Efficiency issued ten bulletins during 1912. These deal with plumbing and house drain inspection, water-works efficiency (three bulletins), garbage collection, health department (three bulletins), and the last presents a summary of the 18-months' work of the bureau.

Appropriations on account of the bureau's work were \$5,000 in 1910, \$18,000 in 1911, and \$15,000 in 1912. In addition, appropriations to city departments to be expended under the guidance of the bureau, were about \$12,000. The total expenditures to Dec. 31, 1911, were \$33,096.14. As to results, the recommendations of the bureau already adopted and installed are saving each year as much as the first year's expenses of the bureau. If all the recommendations are carried out, the total savings are estimated at \$150,000 to \$200,000 a year. On the other hand the bureau recommends increased expenditure in some directions in order to secure the greatest efficiency. This was notably the case in the health department, where an increase in the force of inspectors is recommended, to cost \$32,000 a year. The bureau has not been continued under the present administration.

The Philadelphia Bureau of Municipal Research has been called upon by Mayor Blankenburg to aid him in placing the city administration on a more efficient basis. It has aided in the formulation of a functional budget, in preparing a roster of employees, and generally in working out the details of a programme of greater efficiency.

Boston Finance Commission.—The annual report of this commission included, in addition to the report proper, a section of official communications, a chronology of the Boston public schools, and a reprint of the report on the Boston school system. During the year covered the commission held 114 meetings and 155 hearings; 31 reports were published, and 21 additional unpublished reports were made. Besides the study of the Boston school system, the most important investigations dealt with civil pensions, the city clerk's department, better fire protection, and

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street-lighting and refuse-disposal contracts.

The financial record for the year shows a marked increase in appropriations; and the commission criticizes extravagance in pay rolls and the lack of proper accounting for traveling and other expenses. On the other hand, the borrowing power has been exercised with care and moderation, and the method of award of contracts shows a very marked improvement.

In reference to the charter amendments of 1909 (AMERICAN YEAR BOOK, 1910, p. 223), the finance commission considers that they have worked well and improved many branches of city administration. The effort to reduce the number of signatures required for nominating petitions (5,000) was opposed.

San Francisco.—In San Francisco an ordinance providing for the creation of a Bureau of Efficiency has been passed. The authority is given to the civil-service commission to employ a director, who is empowered to employ such expert assistance as may be required. It is intended that this bureau shall investigate every department of the city government and make such improvements as standardizing the systems of accounts, grading employees, and simplifying the methods of transacting business.

Los Angeles is also considering the establishment of an efficiency division in its civil-service commission. Pasadena has, at the instance of Mayor Thum, established in 1912 a Bureau of Economy and Efficiency.

Budget Exhibits.—New York continues to hold its annual budget exhibit under the city's auspices. Milwaukee held its first in November, 1911, under the auspices of the Socialist administration. In October, 1912, Cincinnati held a two weeks' exhibit; the largest held outside of New York. A civic exhibit was held in Los Angeles in connection with the annual meeting of the National Municipal League, July 8-12. It is to be made an annual event, as was also the "city parade," which was held on the first day of the meeting.

Instruction in Municipal Affairs: Harvard Bureau of Research.—Through the benefaction of two

graduates Harvard University was enabled to establish in the autumn of 1911 a Bureau for Research in Municipal Government. This bureau is administered in connection with the regular instruction in that subject offered at the university to undergraduates and graduates. In its main purpose the Harvard bureau differs from the institutions of research established by city governments or by private philanthropy for the assistance of city officials. It is first of all intended to be a place in which students of municipal government may obtain practice in the use of official data; only incidentally is it designed to be a center for collecting and disseminating information in the form of bulletins or otherwise. All the more important official publications issued by the larger cities of the United States have already been acquired and put upon the shelves for the use of Harvard students. The collection includes copies of the charters, revised ordinances, annual reports and statistical publications. In addition, fairly complete files of the publications of the more important civic organizations, such as good government leagues, taxpayers' associations, chambers of commerce, city clubs, and the like, have been secured and made available for reference.

National Training School for Public Service.—A school was founded in 1911 by Mrs. E. H. Harriman in co-operation with 31 leading citizens of New York and with the new Bureau of Municipal Research, for training, by means of practical work in municipal affairs, a certain number of picked men who give reasonable indications of their likelihood to be able to contribute to the betterment of municipal government in this country by reason of such a training as is proposed. Mrs. Harriman contributed \$80,000 towards this purpose, and the business friends and associates of the late Mr. Harriman have among them guaranteed \$120,000. The intention is to have the fund cover all expenses in connection with the school for five years. The Bureau of Municipal Research undertakes to administer this fund and to direct the time and work of the several classes

of workers. The students will be trained in the analysis of budget estimates, charter drafting and exposition, management of school problems, standardization of salaries, contracts and specifications, methods of assessing and collecting taxes, the preparation of handbooks on administrative practices, the investigation of proceedings of public bodies, and the preparation of public statements. In connection with the regular courses excellent opportunities for field work will be offered under the supervision of experienced workers in the bureau or in the city departments, which have offered to cooperate with the new school, by presenting opportunities for practical work.

Civic Secretaries.—The formation of a civic secretaries' committee by the National Municipal League brings out clearly the development of a new profession, a new career for capable young men who are desirous of devoting themselves to public work and at the same time earning a livelihood. Our cities are coming to be served by a group of voluntary bodies which, guided by thoughtful and efficient men, are contributing largely to the solution of difficult municipal problems. The National Municipal League's committee is only two years old, but already its membership approaches 50, which is an encouraging evidence of growth in this new profession. Reports, advice and suggestions are freely exchanged by the members for the benefit of all; but above all it promotes an *esprit de corps* in civic affairs that promises to be of the largest usefulness in the civic movement.

Political Activity of Municipal Employees.—The employees of a considerable number of cities, Des Moines, Cincinnati, Pueblo, New York, Duluth, Cedar Rapids, Colorado Springs, and the Iowa cities under commission government, are now prohibited by law, ordinance, regulation or executive order from participating in politics. Shortly after taking office on Dec. 4, 1911, Mayor Blankenburg of Philadelphia issued in the following terms an executive order warning city employees against various forms of political activity:

1. Being delegates or alternates to any political convention or being present at any such convention.

2. Serving as members or attending the meetings of any political committee.

3. Serving as election officers, watchers or messengers at any primary or other election, keeping lists of voters or assisting any voters in marking their ballots.

4. Remaining within 50 feet of any polling place at any election beyond the time absolutely necessary to mark and deposit their own ballots; provided, however, that police officers may remain within that limit if their presence is necessary to preserve order.

5. Soliciting votes or canvassing a division in the interest of any party or candidate.

6. Using their offices or official power to control or influence the political actions of any other person.

7. Taking any active part whatsoever in the management of any political party or political campaign.

8. Demanding, soliciting, collecting or receiving any assessment, subscription or contribution, whether voluntary or involuntary, intended for any political purpose whatsoever.

Nothing contained in this order shall restrict the right of any officer or employee to vote as he pleases or to express privately his opinion on any political subject. In furtherance of such freedom of action, they are strongly advised to refuse any assistance in the marking of their ballots.

It shall be the duty of the head of each department rigidly to enforce this order.

On Jan. 1, 1912, Director Porter, of the Department of Public Safety, announced his intention that thereafter the policemen and firemen of the city should be out of politics and strictly non-partisan.

Pennsylvania.—On Feb. 13, the Court of Common Pleas in Philadelphia upheld the constitutionality of the Pennsylvania law prohibiting certain forms of political activity. The court held that the act did not in any way conflict with constitutional provisions respecting free speech; that if in the judgment of the legislature political activity (and especially the taking of an active or managing part in political affairs) was likely to interfere with efficient public service, abstention from it might properly be required as a condition of remaining in the public service, just as engaging in

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any other business which tended to impair the employee's usefulness might be prohibited. The court also holds that dismissal for the reasons set forth in the act is not dismissal for a "political cause," which would seem sufficiently obvious.

National Municipal League.—The eighteenth annual meeting was held in Los Angeles, Cal., July 8-12, at the invitation of the city, of the charter commission then in session, and of sundry civic bodies. A large portion of the programme was devoted to the consideration of various questions that had come up in connection with the drafting of the new charter for the city, which were of both local and general interest and significance. The keynote of the convention was civil-service reform, the President's address dealing with the subject of "Expert City Management." This was followed by several reports on the subject of the "Selection and Retention of Experts in the Higher Municipal Offices," and by papers on the same subject. The conclusion reached by the committee and the speakers was that all but elective officers should be chosen on the basis of merit, after competent examinations. The examinations recommended, however, were of a character to determine not only the book knowledge, but the experience and particular fitness of the applicants.

The committee on municipal health and sanitation reported through its chairman, M. N. Baker, editor of *Engineering News*, and outlined a programme for effective health work

in the average city. The committee on city finances and efficiency, George Burnham, Jr., chairman, recommended functionalized budgets and the establishment of bureaus of efficiency in city governments for the supervision of the actual administration of city affairs. The committee on excess condemnation, Robert S. Binkerd, chairman, reported in favor of giving to cities, by constitutional amendment or act of the legislature, power to condemn lands in excess of the immediate needs, as a means of effective social control.

The committee on publications reported the establishment of the *National Municipal Review*, Clinton Rogers Woodruff, editor, and the publication of three volumes in the "National Municipal League Series" (published by D. Appleton and Co.), to wit; *City Government by Commission*, edited by Clinton Rogers Woodruff; *The Initiative, Referendum and Recall*, edited by Prof. William Bennett Munro; *The Regulation of Municipal Utilities*, edited by Prof. Clyde L. King.

The following officers were elected for the year 1912-13: president, William Dudley Foulke; treasurer, George Burnham, Jr.; secretary, Clinton Rogers Woodruff; and the following vice-presidents: Miss Jane Addams, Camillus G. Kidder, A. Lawrence Lowell, George McAneny, J. Horace McFarland, Charles Richardson, Chester H. Rowell, James M. Thomson, Dudley Tibbits.

The League now numbers 2,600 members, of which 230 are organizations.

MUNICIPAL ACCOUNTING

Uniform Accounting Systems.—The movement for state systems of uniform public accounting for city and other local offices and institutions, continued to make progress during 1911 and 1912.

California established a uniform accounting system under the state Board of Control. For local uniform accounting the board appoints a superintendent of accounts, who, with two assistants constitutes the executive force. They are required to instal and supervise a uniform sys-

tem of accounts and reports for all officers and persons in the state who have the control or custody of public money or its equivalent. The examiners may require reports and information and may inspect and audit the books at any time. All expenses are borne by the state.

Michigan has established a uniform system of accounts in state offices and institutions and in county offices, but the law does not apply to cities and towns.

In Wisconsin the tax commission

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has been given authority to require reports from cities, villages, towns, and counties, on blanks prepared by the commission. On request by any local government, the commission must install a system of uniform accounts and when established, it must be continued in force. The commission may, on request or on its own motion, audit the accounts of any village, town or city. All expenses of installation or audit are to be paid by the local unit.

Utah has provided for a state examiner for state accounts, but did not extend his authority to municipalities.

The state Board of Examiners, boards of county commissioners of counties, board of trustees or other governing body of municipalities in Nevada are required to audit accounts of all offices having to do with public funds once a year, and they may employ an expert accountant for the work. The report of the accountant is to be laid before the grand jury for detailed investigation.

New York.—Comptroller Prendergast of New York City has instituted the policy of issuing a summary of the financial administration of the city, setting forth the salient facts in such a way that they can be readily ascertained and understood. The report presents at the outset a statement of the net cash receipts and payments during the year, giving a complete picture of the municipal income and outgo so displayed that the amount and general character of the receipts and expenditures are clearly shown. Then follow statements coördinating with the general statement, but developing and amplifying it into such component parts as are necessary to bring the meaning and significance of the accounts within ready comprehension. All departments, bureaus and divisions whose functions and purpose are closely allied have been brought together into groups, giving a clear and comprehensible statement of the total amounts expended under each broad administrative function. These are further divided according to the amounts paid from budget appropriations and from the

proceeds of long-term bonds, assessment bonds, and other special revenues. The summary for 1910 shows an aggregate expenditure of \$451,904,000, and receipts amounting to \$452,000,000; the total funded debt as \$946,000,000; and the interesting conclusion is drawn that by means of short-term bonds the city was financed during 1910 at an interest saving, as compared with 1909, of upwards of \$1,000,000.

Philadelphia.—The annual report of city controller of Philadelphia for the year ending Dec. 31, 1911, shows an improvement over the previous year in the asset and liability, revenue, expense and fund system of accounting. It contains a summary consolidated balance sheet; a general account balance sheet, with the operation and surplus accounts; a capital account balance sheet, with the permanent properties, debt and sinking-fund accounts; a special and trust-account balance sheet, and fund balance sheets, showing the condition of funds and appropriations. Schedules are presented showing in detail the expenses for 1911, and the advances between the general account and the capital account. A schedule is given of the permanent properties of the city, resulting from the audit of the property inventory taken at the close of 1910, together with additional properties not included in the original inventory and acquisitions during 1911, with the resultant figures at Dec. 31, 1911. This schedule shows the cost value of city property in the possession of each department and bureau. The totals of land, structures and nonstructural improvements and equipment are shown separately. In addition, structural and nonstructural improvements are divided in this schedule into eleven sub-classes and equipment into nine sub-classes.

A detailed statement of expenditures by objects, upon the classification prepared by the President's Commission on Economy and Efficiency, is shown. Prior to 1911 an analysis of expenditures was made by appropriation items only, making comparisons between different divisions of the city and county government with a view to economy and

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efficiency extremely difficult, if not impossible.

Budgets.—For several years the National Association of Comptrollers and Accounting Officers and the National Municipal League have been giving attention to the subject of municipal budgets. At the Buffalo meeting of the former in June, 1912, a committee, of which Dr. L. G. Powers (also identified with the work of the League) is chairman, presented a report which concluded with this summary:

The budgets of our cities which have grown out of the popular movements to secure control over the expenditures of public money have always contained much information of great general interest. But the documents have too frequently been what someone has aptly described as "voluminous scrap-books of information without table of contents or index." The average taxpayer, or even the average city councilman, has not the time at his disposal, and, if he had, has not the ability to dig out any important information from the mass of undigested detail. The aim of your committee in formulating its suggestions concerning budget-making and presentation has been the same as that of all interested in securing more economical and efficient government—to introduce as far as possible methods and procedure that will provide lucid statements relating to the administration of municipal finance, and to urge the adoption of

methods that are compatible with that end. We would thus urge changes that are comparable to those which occur in a private business when the voluminous data relating to any given subject are arranged and recorded on the basis of what is known as the "flat filing system," which makes all those data easily available for every purpose to which they relate.

This report contained definite recommendations and definitions of terms and is regarded as a distinct step forward in standardizing or making uniform the methods of making municipal budgets.

The Metz Fund (see also *Municipal Efficiency and Research, supra*) has arranged with D. Appleton and Company, for the publication of a handbook on municipal accounting, under the title of *Efficiency Accounting for Municipal Government*, a compilation, somewhat enlarged, of its twelve "Short Talks on Municipal Accounting and Reporting." This book contains a full exposition of the system of accounting and reporting which has been adopted by New York, Philadelphia, St. Louis and several other cities, and as no other book thus far published has undertaken to give a presentation of a modern system of municipal accounting, it may be regarded as a signal event in the development of municipal accounting.

CITY PLANNING

Boston.—By ch. 84 of the 1911 laws of Massachusetts, a Metropolitan Plan Commission was authorized (see *AMERICAN YEAR BOOK*, 1911, p. 243) and required to "make such investigations into the matter of a metropolitan plan for the metropolitan district . . . as will enable the commission to report to the General Court . . . upon the feasibility of such a plan together with such recommendations as it may see fit to make relative to the manner in which such plan should be carried out." The resolve further declared that the "metropolitan plan . . . shall mean a plan for co-ordinating civic development." Early in 1912 a formal report was presented by the commission (T. Jeffer-

son Coolidge, Jr., John Nolen and Edward A. Filene) which recommended that a permanent metropolitan planning board of five members be formed to collect the data for a metropolitan plan through a systematic consultation with all the local authorities using surveys by them and by the public commissions and making special surveys of its own. It further recommended that the board should work out and publish from time to time a comprehensive serial plan for the metropolitan district, setting forth its present and probable future condition as regards main thoroughfares, transportation lines, and facilities of every sort properly coördinated; sites for public buildings and open

spaces, the utilization of which would be of advantage to the several communities within the district, considered with due regard to their relation to the district and to each other. The report also offered detailed recommendations for the apportionment of the cost of extraordinary improvements undertaken in accordance with this plan.

Hartford, Conn., was one of the first American cities to have a permanent city-plan commission authorized by legislative act. Several years ago the city through this commission engaged Messrs. Carrère and Hastings to prepare a plan. To quote from the introduction to this plan, which was published in the spring of 1912, it "is destined to have a beneficent and far-reaching influence upon this growing municipality. It will also stand as a model in city planning for American cities and help to the solution of many a municipal problem here and elsewhere."

Albany.—The Chamber of Commerce published in November, 1911, a "Report of a Committee appointed to suggest a Plan for the Improvement of the River Front." It recommended the improvement of the sanitary condition of the river, the commercial utility of its shores, and the general appearance of its shores. In the spring of 1912 all the civic bodies of Albany joined in a coöperative movement to secure a city plan for Albany and organized the Albany City Plan Association.

Jersey City.—The city-plan commission organized under the laws of New Jersey, of 1911, ch. 71, is issuing a series of pamphlets under the title "Know City Planning," designed to popularize the movement.

Philadelphia.—A permanent committee on Comprehensive Plans has been authorized by an ordinance of Feb. 17, 1912. By its terms it becomes the duty of the director of the department of public works to study, plan, suggest and develop comprehensive plans for the future development of the city. In this work he is to be assisted by the permanent committee, which is composed of certain city officials serving *ex-officio*, and ten citizens appointed by the mayor. The ordinance also provides

for a secretary and such engineers, architects and other experts as may be necessary to further the objects of the committee. An initial appropriation of \$10,000 was made.

Pittsburgh.—Under a law passed in 1911, the mayor of Pittsburgh is authorized to appoint a commission of nine members, the salaries of whom are to be determined by the city council. Ordinances relating to the establishment and improvement of parks and playgrounds, the construction of public buildings, and the laying out of new streets must be referred to this commission, which will report to the councils. The commission will have authority to pass on the opening of new territory for building purposes, to approve the alignment of new streets, sewers, etc., thereby insuring that no mistakes be made at the outset of an improvement that may have a bearing on the future. In fact all matters appertaining to the topographical appearance of the cities will receive the study of these commissions before the final step is taken. The scheme represents an effort to harmonize the development of municipalities, to plan their improvements with a view to future requirements rather than the demands of the present, and thus to make each acquisition of permanent value.

Chicago.—The Chicago Plan Commission has issued during the year "Wacher's Manual of the Plan of Chicago," designed to furnish "a concise and interesting text-book" in which brief notice is taken of Chicago's past, thoughtful consideration given Chicago's present, and a deep effort made to foresee Chicago's future." The object is to provide the students of the city schools with adequate actual knowledge concerning this comprehensive plan, which was inspired in the minds of a smaller number of men, leaders in the business life of the city, and members of the commercial and merchants clubs (see *AMERICAN YEAR BOOK*, 1911, p. 241).

Chicago now has a civic beauty commission appointed by the mayor in September, 1911, the chairman of which is Alderman Joseph F. Ryan. Its first energy has been directed

against the poles which support the trolley wires, electric lights and conductors of electricity in the city, and a strong effort is being made by the commission to enforce a uniform and more artistic type for them.

Milwaukee.—In December, 1911, the Milwaukee city-planning commission sent a message to the common council relative to the attempts to limit the height of buildings within the city which in one respect at least will attract attention. The message says:

If the city, instead of undertaking to limit the height of future buildings, will grapple with and solve more urgent problems, the matter of high buildings will take care of itself. The present law, which in one instance an attempt has been made to enforce, would limit the height of buildings to one and one-half times the width of the street upon which they are built. If the streets of the city were of a proper width there would be no objection to such a limitation, but by the same token, if the streets of the city were what they should be, there would not be the demand for high buildings that now exists. Like most American cities which have grown with great rapidity, Milwaukee streets have been built upon a hit and miss plan, with little or no consideration for the amount of traffic which they must bear. The modern science of street building recognizes the vast importance of a true and exact relationship between the thoroughfares and the business of the city. Perhaps no other feature of a city plan will do so much toward relieving the evils of congestion as the construction of scientifically arranged thoroughfares.

Duluth.—The grouping plan of public buildings designed and proposed by D. H. Burnham & Co. of Chicago was accepted, and has been carried out to the extent of acquiring the necessary grounds for the entire plan by the federal Government and St. Louis Co. The city at the time was not, and at present is not, in financial condition to take over from St. Louis Co. the proposed site of the municipal building, and it is carried by St. Louis Co. with the end in view that the city will, in the near future, be in condition to take it over and improve it in accordance with the proposed grouping plan. The central figure of the proposed plan, the new St. Louis

Co. court house has been completed two years. That part of the grounds which has been cleared of the old buildings has been improved temporarily. Thus the matter stands awaiting the next move by the federal Government.

Des Moines has the distinction of being the first city in America to realize ideas of a beautiful city on a relatively generous scale. Her "civic center," covering a space of four blocks long and three wide on both banks of the Des Moines River, in the heart of the town, is now nearly completed. Four bridges have been thrown across the river, and five buildings, surrounded by beautiful parks and walks, will complete the plan. A library, a coliseum and a post office have been built, and a city hall is nearing completion. Plans for an art institute are now being made.

St. Louis.—The mayor has appointed a committee on city planning of 15 members, including six city officials. This commission, created by virtue of an ordinance, is in reality an evolution. For five years the Civic League through committees had been conducting voluntary efforts to encourage city planning. The board of public improvements and municipal assembly have also taken important steps in the same direction. In 1910 public spirited St. Louisans formed a city-plan association, composed of citizens who paid from their own pockets the expense of investigation, and the preparation of suggestions for a city plan. It prepared a very valuable report upon the subject of city planning for St. Louis. The movement had gained such strength through these several efforts that the city-plan commission was created by ordinance within the year. In the provisions for the duties of the commission, the ordinance is comprehensive. The commission is "to suggest the state and municipal legislation necessary to carry out the recommendations of the commission."

Chattanooga, Tenn.—John Nolen submitted in 1911 a general outline scheme for the city in a report on the "General Feature of a Park System."

Dallas, Tex.—Dallas has been one of the most progressive cities of the Southwest. It is the first city of that section to go at its problems in a careful way. As far back as 1904 the city retained George E. Kessler to prepare plans for the state fair grounds; a year later the park board came into being, and in 1910 the chamber of commerce organized the city plan and development association. This body and the park board are responsible for an elaborate report, designed not for "the building of the city, but to formulate recommendations for rebuilding along broader lines." Mr. Kessler believes with all the modern city planners that the need for a city plan would not be evident unless both the commercial and social life of the community seriously felt "the hampering effects of the existing natural and artificial barriers preventing rational expansion of business and residential districts."

This report is particularly valuable because it discusses and suggests plans for a city which in an exaggerated form presents the difficulties attendant upon the expansion into a great city of a village at a temporary railroad terminus, no special thought having been given in the interim to the needs of the increasing population and business.

Seattle.—Virgil E. Bogue has prepared a plan for Seattle for the Municipal Plans Commission of the city. It is one of the most elaborate plans so far prepared, and deals not only with the city proper and the park developments, but also in detail with the port of Seattle. In its entirety it was submitted to the voters on a referendum vote, on March 5, 1912, and was defeated as an entirety. Its supporters maintain that this was because the plan was not thoroughly understood, and because it was lost sight of in the issues involved in the mayoralty contest and the other referendum and initiative questions submitted at the same time. They maintain that the defeat is only a temporary one.

Los Angeles has had an interesting experience in city-planning work. In August, 1910, the council passed a resolution providing for a city-plan-

ning committee to serve without pay. Having no appropriation to work with it accomplished very little. In January, 1912, at a joint meeting of the City Club and the Los Angeles Polytechnic High School Civic Center, a resolution was passed approving the suggestions for carrying out a city plan made by Frederick Law Olmsted, in an address before the City Club on January 6, and requesting the mayor and council to reorganize the city-planning commission to consist of one member each of the park commission, board of public works, harbor commission, municipal art commission, board of public utilities, playgrounds commission, board of public service commissioners, health department, and three citizens not otherwise connected with the city government to be appointed by the mayor.

This resolution also approved Mr. Olmsted's suggestion that not less than \$10,000 be appropriated for the work of the commission; and also that the city send to the mayor of every city in Los Angeles Co. contiguous to Los Angeles, a copy of Mr. Olmsted's address with the request that the governing bodies of such cities take active steps in accordance with Mr. Olmsted's suggestion to form a local city-planning commission, and that the board of governors of the club take steps to call a meeting of the city-planning commissioners of all said cities, including Los Angeles, for the purpose of organizing a metropolitan planning commission. In reply to the invitations sent out to the various cities only one answer has been received, that of Mayor Thum of Pasadena, who indorsed the idea and promised active cooperation.

Two reports have been prepared and published as supplements of the *California Outlook*, one by Bion J. Arnold entitled "Preliminary Report upon the Transportation Problem" (Nov. 4, 1911); the other entitled "Suggestions for a Comprehensive System of Parks and Boulevards for Los Angeles and Report on the Arroyo Seco Parkway" (Nov. 18, 1911).

Conference on City Planning.—The fourth National Conference on City Planning was held at Boston, May

27-29. About 125 members and delegates were present. These came from all parts of the United States and Canada. Architects, both landscape and building, engineers, members of city-planning commissions and other municipal boards and representatives of civic and commercial organizations were in attendance. Engineers took a more prominent part in the proceedings than heretofore. The programme was marked by having a few set papers pertaining to a small number of main subjects. Frederick Law Olmsted, Jr., discussed the meaning and progress of city planning. Nelson P. Lewis dealt with the question of meeting the cost of all city improvements which increased land values, through no act of land own-

ers, by assessing the cost on the property benefited.

It was decided to continue the present informal conference plan of organization, in general charge of a large committee. Frederick Law Olmsted, of Brookline, was reelected chairman; Nelson P. Lewis, of New York, vice-chairman; and Flavel Shurtleff, 19 Congress Street, Boston, secretary of the executive committee.

Resolutions were adopted indorsing the general principle of meeting the cost of city improvements by assessing benefits on abutting property, as advanced by Mr. Lewis, and providing for studies of a city plan for a city of 500,000 people, the studies to be submitted to the 1913 conference for discussion.

HOUSING

Progress of Housing Reform.—The most important thing in housing during the past year has been the development of interest in the South. Second to this is the increase of interest on the Pacific coast. The year before the great development of interest was in the Middle West. Perhaps most significant is the fact that many of the smaller cities are beginning to realize that they have a housing problem and to work for the betterment of housing conditions. Until recently it was a generally held superstition that only a few of the great cities needed housing reform. At present more than one hundred cities are at work; most of them have definitely organized committees or associations, some with paid secretaries.

Tenement and Apartment Houses.—The most dramatic event of the past year was the unexpected announcement by the New York Court of Appeals that there is a distinction between a tenement house and an apartment house. This announcement came in the decision in the Grimmer case, which had been before the court for nine years. The distinction practically amounted to saying that an apartment house has a set bathtub while a tenement has not. The tenement-house committee of the Charity Organization Society, of which Lawrence Veiller is executive officer, se-

cured an amendment to the New York tenement-house law within 24 hours, which stated definitely that apartment houses are to be considered as tenements for the purpose of the Tenement-House Act and so at once nullified the effect of the court's decision. It was one of the quickest and most effective campaigns on record. If the court's decision had stood it would have practically devitalized the tenement-house law and the tenement-house department, because practically every new tenement has all the things pertaining to an apartment, according to the court's decision, including a set bathtub.

The National Housing Association (Lawrence Veiller, secretary, John Ihlder, field secretary, 105 E. 22nd St., New York), has issued during the year a series of publications dealing with housing conditions in various parts of the country and furnishing certain concrete suggestions as to how to improve these conditions. The New York School of Philanthropy at the same address has issued a bulletin (No. 6) on improved housing. The annual meeting of the National Housing Association was held in Philadelphia, Dec. 4-6.

National Conference of Charities and Correction.—One of the important features of the Cleveland Conference of Charities and Correction was the presentation of a platform of

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industrial minima. Under the head of "Housing" this platform recommended:

1. *The Right to a Home.* Social welfare demands for every family a safe and sanitary home; healthful surroundings; ample and pure running water inside the house; modern and sanitary toilet conveniences for its exclusive use, located inside the building; adequate sunlight and ventilation; reasonable fire protection; privacy; rooms of sufficient size and number to decently house the members of the family; freedom from dampness; prompt, adequate collection of all waste materials. These fundamental requirements for normal living should be obtainable by every family, reasonably accessible from place of employment, at a rental not to exceed 20 per cent. of the family income.

2. *Taxes.* To protect wage earners from exorbitant rents and to secure for them that increased municipal service demanded by the massing together of people in thickly settled industrial communities, a greater share of taxes to be transferred from dwellings to land held for speculative purposes the value of which is enhanced by the very congestion of these industrial populations.

3. *Home Work.* Factory production to be carried on in factories. Whenever work is given out to homes, abuses are sure to creep in which cannot be controlled by any known system of inspection or supervision.

4. *Tenement Manufacture.* Tenement-house manufacture is known to be a serious menace to the health, education, and economic independence of thousands of people in large cities. It subjects children to injurious, industrial burdens and cannot be successfully regulated by inspection or other official

supervision. Public welfare, therefore, demands for city tenements the entire prohibition of manufacture of articles of commerce in rooms occupied for dwelling purposes.

5. *Labor Colonies.* In temporary construction camps and labor colonies, definite standards to provide against overcrowding, and for ventilation, water supply, sanitation, to be written into the contract specifications, as now provided in the New York law.

Ohio.—The Ohio legislature in 1910 and 1911 authorized the creation of a Building Code Commission to be composed of the secretary of the state board of health, the state fire marshal, and the chief inspector of work in shops and factories. The law creating this commission directed these officials to prepare a code of regulations with respect to the construction, safety, sanitary conditions, and maintenance of public and other buildings. The commission has very nearly completed this task, having formulated most of the important sections of the code.

Fall River, Mass.—Carol Aronovici, director of the Bureau of Social Research of New England, prepared, and the Associated Charities Housing Committee published, in the late spring of 1912, a comprehensive study of housing conditions in this characteristic industrial center. An important recommendation was that the building department, the inspector of plumbing, and the health department should be more closely related and coördinated.

STREET CLEANING

Street Cleaning.—The U. S. Census Bureau in April issued a preliminary statement of the cleaning service in cities with over 30,000 population for the year 1909. The statistics were prepared under the direction of Le-Grand Powers, chief statistician, and are subject to revision. Street-cleaning operations were reported by each of the 158 cities covered by the report and in each city there was a certain area that was subject to a regular cleaning at least once a week. The largest number of square yards subject to regular cleaning are reported by New York, 30,203,317;

Philadelphia, 16,698,182; Buffalo, 7,184,563; Baltimore, 7,080,450; and Washington, 3,589,297. Cities with over 300,000 population which had the smallest areas subject to regular cleaning were New Orleans, 420,420 sq. yd., and Chicago, 1,022,660 sq. yd. In Chicago the cleaning done by the city is confined to the business section; in other sections a large amount of cleaning is done through associations of property owners organized for the purpose.

Of the total 178,277.091 sq. yd. of streets subject to regular cleaning 39.9 per cent. were swept by hand,

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36.3 per cent. by machine, 17.5 per cent. by both hand and machine, and 6.3 per cent. by flushing. Some of the areas swept were also subject to occasional flushing. The most extensive flushing of streets (where that was the only method of cleaning reported) was reported by Detroit, Louisville, and Cleveland. The largest areas both swept and flushed were reported by St. Louis, Kansas City, Mo., Cincinnati, and Cleveland.

Significant changes were noted between 1909 and 1907 in the methods employed in street cleaning. The area swept by hand was greater than that swept by machine in 1909, but from 1907 to 1909 the area swept by hand was increased by only 5,738,092 sq. yd., while that swept by machine increased by 17,954,305 sq. yd. The number of men employed per 10,000 sq. yd. subject to regular cleaning

was less in 1909 than in 1907, this change reflecting the increase in machine cleaning, in which fewer men are required for a given area than in hand sweeping.

The cost of street cleaning in cities arranged according to population groups in 1909 is shown in the following statement:

POPULATION	COST OF STREET CLEANING: 1909		
	Per 1,000 population	Per 10,000 sq. yd. regularly cleaned	Per 1,000,000 sq. yd. of cleaning done
Over 300,000	\$527.29	\$885.22	\$554.24
100,000 to 300,000	448.84	708.42	307.29
50,000 to 100,000	404.58	581.01	279.21
30,000 to 50,000	280.11	472.06	264.64.

FIRE PROTECTION AND FIRE PREVENTION

Fire Protection Apparatus.—There have been no special developments in the way of new fire apparatus, but there is a steady improvement in the application of the gasoline motor to fire-department work, especially in respect to propelling the various types of apparatus. In the leading cities fire apparatus is rapidly being motorized. In New York the automobile is generally used by the commissioners and superintendents and their assistants. Pittsburgh is spending \$700,000 this year in putting its fire department on a horseless basis. Cleveland is trying the experiment by putting tractors on the existing apparatus. In the opinion of close students the automobile apparatus offers much greater attraction to the small cities than to the large. For the small city and town, where the horse may receive food and lodging and the necessary attendance 20 or 30 days for every hour they are in service drawing fire apparatus, the economy of the automobile apparatus is undeniable. Even for Boston, however, a most conservative estimate places the total annual cost of the automobile apparatus fully as low as that of the horse-drawn, with a reasonable doubt as to whether it might not be considerably lower.

There is also, from one cause or another, a gradual increase in the number of buildings provided with automatic sprinkler equipments and with wire glass or other protection to vertical and horizontal openings. These features, together with the natural improvement in building construction in most growing cities, are important factors in reducing the general conflagration hazard. There has also been an increase in the construction and use of high-pressure service. Baltimore and San Francisco have installed theirs and Philadelphia extended hers.

Boston Chamber of Commerce Report.—A committee of the Boston Chamber of Commerce on fire prevention, appointed in August, 1910, in September, 1911, submitted its report in relation to fire hazards and losses, with recommendations as to the best method to follow in improving conditions. Appendices present statistics of fire losses in the United States and Europe, an extract from the report of the Illinois Fire Insurance Commission on the profits of insurance companies, comparison of the cost of construction of houses of different materials and drafts of proposed legislation. The committee recommends further regulation of

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building construction, the creation of a fire bureau to investigate the causes of fires, and the installation of a high-pressure water service in the congested portions of the city and self-propelled fire apparatus.

Chicago Bureau of Fire Prevention.—Chicago has finally completed its fire-prevention code, the ordinance creating a bureau of fire prevention and public safety having been passed July 22, 1912. Assistant Fire Marshal, John C. McDonald, has been appointed to take charge of the bureau. Among the subjects covered and provided for in the ordinance creating the bureau are fire drills in factories, installation of automatic sprinklers wherever fire-risk warrants; a section on garages, limiting the use of volatile and inflammable liquids and the location of boilers, and an item giving the fire chief definite authority so he can place responsibility for acts of men under him. The new bureau starts with the following officers: chief of fire prevention and public safety, to be appointed by the fire marshal from the list of assistant marshals, and to draw the salary of an assistant marshal; fire-prevention engineers; fire-prevention inspector in charge; four supervising inspectors, one for each section of the city and one for the Loop; and forty or fifty inspectors to work throughout the city. The ordinance became operative Aug. 8.

New York Bureau of Fire Prevention.—In New York City the Hoey fire-prevention law (approved Oct. 19, 1911) provides for the establishment of a bureau of fire prevention in place of leaving such work to the discretion of the commissioner, as hitherto, when the prevention of fires has been completely submerged as a function merely incidental to the extinguishment of fires, largely dependent upon the attitude thereto of the chief of the department. The new bureau is of coördinate importance with the bureau of fire extinguishment and has an independent chief reporting to the commissioner.

In connection with the New York Budget Exhibit, there was shown an extended fire-prevention exhibit. Interest in the subject has also been

shown in the inauguration of fire-prevention days in many places. The Pennsylvania Conservation Association has distributed widely among school boys and girls, with the approval and active coöperation of Governor Tener, a circular showing the dangers of carelessness in the matter of fire.

National Fire Protection Association.—Fire-prevention work was cordially endorsed by President Taft, Governor Deneen and Mayor Harrison in connection with the annual meeting of the National Fire Protection Association at Chicago. President Taft sent a dispatch, while Governor Deneen and Mayor Harrison elaborated their views on the fire waste and its correction in papers which were read by President Merrill. The latter in his annual address declared that the year 1911 showed a larger sacrifice of life and property in America through loss by fire than any previous year not visited by a great disaster or a general conflagration. He continued:

Our assimilation of three important national committees, dealing with the subjects of electricity and explosives and combustibles respectively, which I reported at the last annual meeting, has benefited all of the other interests concerned as well as this association. Many of the special committees of the association made constructive reports which, as adopted by the association, will make for an increase in the number and extent of the standard requirements and specifications on fire-prevention and fire-protection topics, which our association alone has been capable of producing in form which results in general adoption and utilization.

H. L. Phillips, of Hartford, Conn., was elected president, and Franklin H. Wentworth, of Boston, reelected secretary.

"A Five Years' Fight against Fire Waste" is the title of a comprehensive pamphlet issued by Powell Evans, chairman of the fire prevention committee of Philadelphia. The various articles and addresses which it contains make it a handbook on the subject of the possible control of fire waste by adequate fire protection and prevention.

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VICE INVESTIGATION AND THE SOCIAL EVIL

Denver.—Mayor Henry J. Arnold of Denver has appointed the following morals commission: Dr. H. F. Rall, president, president Ilias School of Theology; C. W. Bigelow, principal West Denver High School; Mrs. Helen Grenfell; Miss Nona Brooks, pastor Divine Science Church; A. J. Fowler, Miss Gertrude Vaile. *Ex-officio* and consulting members are: Judge Ben B. Lindsey, Juvenile Court; David H. Fouse, president of the Civil Service Commission; Harry W. Purinton, president of the Charity Board, and George Creel, president of the fire and police board.

Philadelphia.—A vice commission has been appointed by Mayor Blankenburg, with William Clarke Mason as chairman. It was the outgrowth of a meeting held under the auspices of the Philadelphia City Club.

Portland, Ore.—The first report of the Vice Commission of Portland was published in January, 1912. In connection with other and related matters, the commission had been at work for three months on the question of the prevalence of venereal disease in the city of Portland, and the methods which the public takes, through officials and otherwise, to (1) protect itself and (2) control or treat the disease. The commission reported as follows:

We have considered seriously the question of counseling the reportability of all venereal diseases, but we feel that, however desirable and inevitable such legislation is, the time is not ripe at present. In order that a sanitary law may be enforced it must be backed by public opinion, and this can be brought about only by a campaign of education. We, therefore, believe that the first and most necessary step for the control of venereal diseases is a vigorous campaign of education which will teach the public something of the prevalence and dangers of these diseases and the necessity of reporting the same. We, therefore, desire to emphasize the importance of education concerning proper sex relations, their violation and the consequences thereof, and to commend the work in this field already begun by the Social Hygiene Association of Portland.

In the meantime and as a first step in a constructive policy in this matter, we recommend the enactment of

law: Requiring the reporting of such cases of venereal disease as are encountered in dispensaries, hospitals, juvenile and municipal courts, penal institutions, maternity hospitals, rescue homes and all places of detention; and compelling persons so reported to be treated; and the establishment of special clinics under the board of health for the treatment of venereal disease; and the maintenance by the municipality of venereal wards in one of the existing hospitals, if such arrangement can be made, until the city builds a city hospital; and that the city contribute to the support of the free dispensary, especially for the treatment of venereal disease.

Dr. Henry Russell Talbot was chairman of this commission.

Lincoln, Neb.—A commission has been appointed as an outgrowth of the Men and Religion Movement. Prof. Lucile Eaves is chairman.

Chicago.—The dean of the Episcopal Cathedral in Chicago (the Very Rev. Walter T. Sumner, who was chairman of the Chicago Vice Commission) has announced that the clergy of the Cathedral will not hereafter marry any person who does not produce a certificate of good health as well as a marriage certificate. This announcement has the approval of the bishop of the diocese, the Rt. Rev. Charles P. Anderson, D. D.

The fight against vice is being pursued along legal lines in Illinois. The case of Hoyt v. McLaughlin (250 Illinois Reports, 442) established a precedent for legal action against houses of ill-fame. Accordingly, a bill of complaint has been filed in the Circuit Court of Cook County based on this precedent. This case (Otis v. Brilly) is against the owner of a house rented for an immoral purpose, and against the lessee and manager of the disorderly resort maintained therein. The bill of complaint, supported by affidavits, defines the damage which this nuisance is to the adjoining property of the complainant and his tenants, as due to the following facts: the indecent scenes and sounds within and without this resort; the diseased condition of the inmates and of the patrons; the danger of infection which others fear and are warranted in fearing by medi-

cal authorities cited; the orders of the chief of police to commanding officers regulating and thereby officially recognizing and tolerating such illegal practices, orders which not only fail to be enforced, but also contravene the laws of the state prohibiting such practices.

The damage and injury suffered by the complainant is complained of not merely as a public nuisance, but as "a private nuisance, inflicting a special damage and injury different from that suffered by the public." On the ground that "the complainant's remedy at law is wholly inadequate and the damages that could be recovered in such action at law nominal, said damages being so commingled with causes of damage and injury produced by other similar houses of ill fame in the immediate neighborhood," this bill of complaint calls for an order of the court, both temporary and permanent, "restraining and enjoining the further keeping and maintaining of said house of ill-fame, and decreeing it to be illegal and its keeping and maintenance a private nuisance to the complainant." The attorneys have applied for a change of venue on the ground that no judge of the Circuit Court of Cook County is regarded by them as qualified to hear the case without prejudice to the defendants. This application was immediately denied.

The first edition of 10,000 of the Chicago Vice Commission report (see *AMERICAN YEAR BOOK*, 1911, p. 250) having been exhausted a new edition was published in 1912. (See also XVIII, *Prevention, Correction, and Charity*.)

Cleveland.—A vice commission of the Cleveland Baptist Brotherhood presented a report in October, 1911, considering the following questions: "The Financial Status of the Liquor Business in Cleveland"; "The Law and the Saloon in Cleveland"; "Is the 'Golden Rule Policy' opposed to Vice?" see under *Police*, *infra*); "Is the Police Force in Cleveland Adequate?" "The Social Vice in Cleveland"; and "Public Amusements." The chairman of the commission was H. G. Baldwin.

New York.—To make the owner of a building take a healthy interest

in his property and force him to pay the moral as well as the financial tax which society has a right to assess upon his earnings, is the object of a campaign to require every building in New York City to display conspicuously a brass plate bearing the name and address of the owner. Already an ordinance to accomplish this has been introduced in the Board of Aldermen. Dubbed by its opponents, in ridicule and contempt, the "little tin plate" ordinance, this phrase has now been caught up as the slogan of the campaign.

The Committee of Fourteen was organized in 1905 to suppress disorderly (Raines law) hotels which had increased throughout the greater city as a result of the then new excise law. This committee, after completing the study of law enforcement and making its recommendations, continued its work. In its successful accomplishment of the task originally undertaken the committee came into possession of valuable information concerning the social evil in New York. As it declared, it seemed immoral to allow such information to be lost and such force dissipated. Therefore in default of the adoption of its recommendation for the appointment or creation of a vice commission, the committee had widened its work to the suppression of commercialized sexual vice. A guarantee fund has been secured for a minimum budget, and the Rev. John P. Peters, D. D., rector of St. Michael's Church, has resumed the chairmanship held by him from 1905 to 1910; Frederick H. Whitin and Walter G. Hooke are the secretaries in charge of the detail work. This broadening of the committee's work is declared by its managers to be the result of the failure of Mayor Gaynor to act upon the recommendations contained in the report of the research committee of the Committee of Fourteen, made in April, 1910, and of the grand jury of which John D. Rockefeller, Jr., was foreman. The latter was charged especially to investigate white-slave traffic.

The conviction of Lieut. Charles Becker (see under *Graft*, *infra*) and the revelations and investigations incident thereto, may, however, give a

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new impetus to the demand for an official grappling with the problem at its sources.

A new edition of the original report of the Committee of Fifteen, of which the late William H. Baldwin was chairman, has been published by G. P. Putnam's Sons and edited with new material by Prof. Edwin R. A. Seligman, of Columbia University.

The American Vigilance Association, with David Starr Jordan as president, has been organized as a merger of the National Vigilance Committee, the American Purity Alliance, and various state and city committees and societies formed to fight the white-slave traffic. It is seeking a charter of incorporation from the federal Government and opened general headquarters at 105 West Monroe St., Chicago. The eastern offices and library are at 156 Fifth Ave., New York, and the legislative office is in Washington. A western office will be opened in San Francisco, Cal. The officers are as follows:

Cardinal Gibbons and Very Rev. Dean Walter T. Sumner, vice-presidents; Charles L. Hutchinson, treasurer; Clifford G. Roe, executive secretary and general counsel. Among the members of the Executive Board thus far chosen are: Clifford W. Barnes, chairman; John G. Shedd, Julius Rosenwald, Henry P. Crowell, A. C. Bartlett and Jane Addams, of Chicago; James Bronson Reynolds and Grace H. Dodge of New York; Dr. O. Edward Janney of Baltimore; Wallace Simmons of St. Louis; Charles Bentley of San Francisco; and Henry J. Dannenbaum of Houston, Texas.

George K. Kneeland is engaged as the director of investigation. He served in a similar capacity for the Research Committee of the Committee of Fourteen in New York, and for the Vice Commission of Chicago.

Under his direction the work of aiding vice commissioners, committees, and organizations in various cities will be conducted.

B'nai B'rith.—The international order of B'nai B'rith at its recent convention in Europe instituted a worldwide campaign against the white-slave traffic and is informing organizations in different countries engaged in similar work of the action taken by the order, with a view of securing their coöperation. The plan of procedure includes the following policies: to enlist the press of the entire world in aiding the fight against the trade in girls and women; to organize special committees in the cities on the border and at harbors; to appoint well-qualified agents to be their executives for supervision and control; to distribute warnings against the traders by printed circulars and notices; to unite women's organizations for preventing the traffic; to send itinerant speakers to all lands; to teach adolescent youth the dangers of social vice; to establish in every country an information bureau which shall be responsible and effective; to organize in the greater cities agencies for the protection of women and girls who are traveling; and for the purpose of carrying out this work, to establish central bureaus of the order in Berlin, for Europe, and in Chicago, for North America.

Bibliography.—A number of important books have been published during the year, the more important of which are: *Sex in Relation to Society*, by Havelock Ellis. (F. A. Davis Company, Philadelphia); *A New Conscience and an Ancient Evil*, by Jane Addams. (The Macmillan Company, New York); *The Social Evil*, edited by E. R. A. Seligman, LL.D., of Columbia University (G. P. Putnam's Sons, New York).

POLICE

Chicago.—In Chicago an investigation of the police department was conducted by the Civil-Service Commission at the request of Mayor Harrison. It devoted its attention chiefly, first, to gambling, and, second, to violations of the order of the

general superintendent of police of April 28, 1910, concerning (1) the entering of boys under eighteen years of age into disreputable houses; (2) the harboring of inmates under legal age; (3) forcible detention (white-slave trade); (4) the presence of

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women in saloons; (5) indecent attire; (6) subsisting on the income of inmates; (7) street walking and soliciting; (8) signs, lights, colors or devices; (9) obscene exhibitions; (10) houses of ill fame, outside restricted districts; (11) the sale of liquor in houses; and (12) the sale of liquor after 1 a. m.

The commission found:

1. That there is, and for years has been, police protection of criminal classes.

2. That a bi-partisan political ring exists by and through which the protection afforded the criminal classes by the police department is fostered and maintained.

3. That to such connection may be charged a great part of the disorganization, lack of discipline and inefficiency existing in the department.

4. That apart from such connection, inefficiency also arises through certain specified faults of organization and administration.

5. That the police department, as now numerically constituted, can, if honestly and efficiently administered, enforce the statutes, city ordinances and regulations in regard to crime and vice, as well as perform routine police duty.

The commission recommended:

1. That the division of the city in police divisions and districts be abolished.

2. That the position of inspector be abolished (there were five inspectors).

3. That captains be assigned to command important precincts and lieutenants the remainder, and that each be held accountable for conditions therein, reporting directly to general headquarters.

4. That such numbers of captains and lieutenants be detailed to general headquarters as to constitute a working staff for the general superintendent, at all times subject to return to former duty.

5. That a system of inspection be installed that will insure a proper performance of police duty on the part of officers and men.

6. That methods of reports and correspondence and records be handled at headquarters in the manner specified in detail.

7. That assignments to special duties, other than police duty in the strictest sense, be not used, in order that every available patrolman may be on beat. That non-police duty in the department of police be performed by persons paid the regular salary for such work,

and taken from the general lists of the proper class.

8. That the present method of assignment of sergeants be revised so as to secure substantial equality as to numbers of men supervised.

9. That transfers as a punishment or at the request of persons outside the department be discontinued and forbidden.

10. That the standard of promotion examination be raised as set forth in detail.

11. That police-department efficiency markings be installed as set forth in detail.

12. That annual medical and physical examinations be held and made a part of individual efficiency records.

13. That an age limit be fixed for compulsory retirement.

14. That the police pension law be revised to prevent the payment of pensions to persons discharged from the force.

15. That substitute patrolmen be used according to the plan set forth in detail.

16. That the police school of instruction be extended and a system of station schools of instruction uniform throughout the precincts be devised and installed and that a school for officers be established.

17. That rules regarding vice be revised and amplified in accordance with the reports of the vice commission, keeping the restricted district.

18. That the ordinance prohibiting street walking be amended so as to provide for a graded increase of fine for each offense, eliminating judicial discretion as far as possible.

19. That the laws regarding vagrants and persons of known bad character be revised as set forth in detail.

20. That a card-index system be installed in every precinct station, which will at all time show, up to date, the name, description, character, haunts, habits, associates and relatives of every known person of bad character residing in or frequenting such precinct, including classes of criminals set forth in detail.

21. That immediate and stringent measures be taken to disband the organization known as the United Police and to prevent the creation of any organization whose influence and tendency is to break down departmental organization and efficiency.

Each of these points is dealt with in a detailed report. During the progress of the investigation the commission's trial board was at work hearing the evidence against particu-

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lar officers of the force. One hundred and fifty of the highest police officials were discharged and rendered ineligible to the city service in the future. The council abolished the inspectorships, the police divisions and districts in accordance with the recommendations and report. A very large number of disreputable houses outside the restricted district were closed.

New York.—(See *Graft, infra.*)

Bertillon System and Finger-Print Process.—The metric and finger-print methods of identification combined, one as a verification for the other, are employed in 55 cities of the United States, the metric in about 90 and the finger-print only in about 20. The two processes are maintained in France, the finger-print in England, and the combination in Austria-Hungary, and the latter government, through the Ambassador to the United States, is now engaged in an endeavor to affect reciprocity of this nature with the cities of this continent through the channel of the International Bureau of Criminal Identification at Washington.

Golden Rule Administration of the Police.—Chief Fred Kohler, of Cleveland, the originator of the "golden rule" policy, is authority for the statement that during the years 1908, 1909 and 1910 in which the policy was applied in Cleveland there was established a world-wide precedent in handling first and minor offenders against the laws and ordinances and the relentless prosecution of habitual offenders and confirmed criminals. During that time the Cleveland police reduced the number of arrests from 30,418 in 1907, at which time they

were still working under the old and general system of making arrests, to 10,085 in 1908 (a reduction of 66 per cent.), and to 6,018 in 1909 (a reduction of 80 per cent.). Under this system the members of the department were given more time to apprehend persons who have committed felonies.

The International Association of Chiefs of Police, Major Richard Sylvester, Washington, president; Hawayo Carr, Grand Rapids, secretary. Through the efforts of President Sylvester the Association became international in character in 1902, and since that period has carried upon its roster leading representatives of authority, not only of the United States and Canada, but of Austria, Japan, Korea, Guatemala, Cuba and other countries, while the best informed authorities of England, Scotland and France have contributed to its support. Its purpose is to secure a closer official and personal relationship among the police officials at home and abroad; to secure unity of action in police matters; to elevate the standard of police institutions by urging the elimination of politics from its conduct; to obtain tenure of office for those employed in the service; to effect the maintenance of honorable men and means in the transaction of police affairs; to advance the adoption of humane efforts in the enforcement of laws; to procure the adoption of pension and retirement laws for the police; to provide modern and expeditious facilities for the prevention and detection of crime; and to maintain uniform methods for the identification of criminals. The 1912 meeting was held in Toronto, Canada.

GRAFT

New York.—The murder on July 16 of Herman Rosenthal, a professional gambler, about to reveal to the district attorney the relations of the police and the gamblers, was the beginning of a crusade the end of which is not yet in sight. For his murder a police lieutenant, Charles Becker, and his four hired assassins have been convicted. As a direct result of this murder the Board of Aldermen appointed a committee to conduct an

inquiry into the police department. Starting when the papers were filled with stories of graft amounting yearly to millions of dollars and with statements that Becker was only a cog in the wheel and an underling of men "higher up" in the "system," it would have been natural for an investigating committee to turn its attention immediately to the hunt for graft and grafters. At the first hearing the mayor was questioned con-

cerning policies of police administration for which he was responsible, and the methods he had used to ascertain how successfully the policies had operated and what results had been accomplished through them. Most of the other hearings, up to the beginning of December, were devoted to an inquiry into methods of selection, dismissal and reinstatement of policemen.

Below, according to a staff member of the New York Bureau of Municipal Research, are some of the more important facts disclosed by the inquiry into police administration:

Applicants for positions on the force either denied or forgot arrests for bigamy, stealing, homicide, gambling, seduction, disorderly conduct, assault.

They told other lies as to previous employment, reasons for discharge, date of birth (including forged certificates), fearing that the truth would prevent appointment.

The investigating bureau of the police department, which had uncovered the bad records of the applicants and proven them perjurers, was abolished.

The civil-service commission at the time the investigating bureau was abolished was not equipped to conduct proper character investigations.

Men under charges were allowed to resign "of their own free will," thus retaining a clean record and eligibility for appointment to any other department, or for reinstatement as policemen within a year.

Rehearings have been ordered in cases which the chapter says shall not be reheard. One dismissed officer who had been out for nine years was reinstated after he had been refused by other commissioners and by the court of appeals, which declared the dismissal "proper" and the man "without legal rights."

All of this, according to the same authority, seems far removed from an effort to locate the grafters, who, it is claimed, have been collecting millions of protection money annually; but closer analysis impresses one with the superior merit of the method the committee is pursuing. It is important to find the grafters and put them off the force, but it is vastly more important to analyze methods which permit a Becker to get on the force, and once on, to remain without detection. If there is a "system" it is important to smash it and locate its beneficiaries, but it

is of more lasting importance to get facts on which organization and methods can be developed which will make it increasingly difficult, if not impossible, for the "system" to live.

In December the committee turned its attention to graft in the police department, with immediate practical results. On Dec. 12 a woman under indictment for keeping a disorderly house told the committee a story of police graft extending over a long period, with full details as to names and dates. Much further evidence of the same kind was offered on the following days. As a result, District Attorney Whitman, who had already begun an investigation on his own account, was able, on Dec. 23, to secure the indictment of a patrolman and two other persons named as collectors for the police. Another patrolman was arrested next day at the instance of the police commissioner.

Detroit has been the scene of a wholesale exposure of graft in connection with legislation, 20 members of the council being involved along with the committee secretary, who has pleaded guilty. Ten aldermen and the clerk of the common council committees have been bound over. The aldermen who were charged with accepting a bribe were also bound over on the conspiracy charge.

Chicago.—At the request of Henry Ericsson, commissioner of buildings, the civil-service commission of Chicago conducted an inquiry into the methods and systems in use and the organization within the department of buildings, continuing from Dec. 28, 1911, to May 6, 1912. In this investigation the commission had the assistance of the experts of the efficiency division. As a result of this investigation 1,244 violations of the building code were disclosed. Of these 182 separate violations were of the section relating to habitable rooms, bathrooms, pantries, requirements as to ventilation and lighting; 146 separate violations concerned rooms, sizes and height of attic rooms; 112 violations dealt with constructing buildings contrary to approved plans.

In addition to Chicago's constructive work in her building department, the law-breaking saloon as a factor in illegal voting and attendant graft

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received deserved attention from the Citizens' Association of that city. Four indictments charging serious violations of the election laws in connection with the procurement of illegal voting were returned by the Cook County Grand Jury on May 29, 1912, on evidence obtained by the Citizens' Association.

Atlantic City.—In contrast with the quiet but effective procedure in Chicago is the latest dramatic exposure in Atlantic City with dictagraph and sleuth accompaniment. The operations of Judge Kalisch's "elisor grand jury," acting in co-operation with Governor Wilson's officials, were set forth in the July number of the *National Municipal Review* under the title of "Law Breaking in Atlantic City." As a fitting climax to this came the arrest of five councilmen charged with agreeing to promote a concrete boardwalk, for which each was to receive \$5,000 if the deal went through. The councilmen involved are said to have been

trapped into a confession when confronted with dictagraph records of criminalizing conversations.

Denver.—On Sept. 10 a grand jury which had been in session continuously for almost three weeks returned indictments against more than a hundred persons, besides corporations. Forty-six true bills were signed by Judge Shattuck, but in many of them more than one person was named in the indictments, several of whom owned property in the restricted district. The indictments against the city officials were on charges of violating their oaths of office in permitting vice to flourish. Other indictments were against owners of property used as resorts or against resort proprietors. An investigation has been in progress for months.

Albany.—On March 29, 1912, the special committee of the state senate appointed to investigate the city and county of Albany transmitted its report to the legislature with a long series of recommendations.

NUISANCES

SMOKE

Railroad Electrification.—The abolition of smoke is furthered through the electrification of the railroads. The latest development along these lines has been the announcement of the New York, New Haven and Hartford railroad that it expects to have within 18 months 560 miles of its system clear of steam locomotives and using electric tractors entirely. Compulsory electrification of all the railroads entering Boston was decided upon by the legislative committee on railroads, but the bill failed to pass. The Illinois Central in June, 1912, announced through its attorney, in open court, its intention to electrify the road and terminals in Chicago within eight years.

Chicago, both officially and unofficially, is making a determined effort to abate and eventually to abolish the smoke nuisance. The Chicago Association of Commerce has been the leader in the movement (see *AMERICAN YEAR BOOK*, 1911, p. 256). It has outlined a plan of investigation which includes a consideration of the

necessity of changing motive power of steam roads to electric or other power, the mechanical feasibility of such change, and the financial practicability of such change.

The various kinds of smoke producers are classified in the announcement as follows: steam locomotives; steam vessels; high-pressure steam stationary power and heating plants; low-pressure steam and other stationary heating plants; gas plants and furnaces for metallurgical, manufacturing and other processes.

As a means of reducing air pollution with respect to railway operations the following alternative forms of motive-power operation, as compared with steam-locomotive operations, will be studied: internal-combustion locomotives; compressed-air locomotives; storage-battery electric motive power; continuous-contact electric motive power. "The investigation," says the statement, "includes a study of existing physical characteristics of Chicago terminals as related to the mechanical feasibility of a change in motive power, the relation of existing routes and

traffic movements and also the probable conditions that will exist in the year 1917."

University of Pittsburgh Investigation.—A searching investigation of the smoke problem is to be made by the University of Pittsburgh. Sixteen experts will conduct it, eight of whom will work under the direction of Dr. Raymond C. Benner, who has charge of the inquiry. By the end of two years or sooner Dr. Benner hopes to have amassed a volume of information that will show just what part smoke plays in the life of any city. The effects of smoke will be studied from the botanical, economical, physiological and psychological points of view. The legal aspects of the problem will be considered. Two engineers will make a mechanical engineering survey of Pittsburgh. A botanical survey will be made. In this the University will have the cooperation of the Agricultural Department of State College. Architects will take observations as to the damage caused by smoke to building and building materials. The effect of smoke on different paints will be observed. Seven doctors will study the effect of smoke on the general health of the community and its results on different organs when breathed into the lungs.

Publications.—The Rochester Chamber of Commerce published during the year an interesting pamphlet on "The Abatement of Smoke."

The Smoke Commission of Des Moines published a report in February, 1912, in the course of which it estimated roughly that the annual loss to the city amounts at least to over \$1,000,000, and that speaking very conservatively 50 per cent. of this loss can be saved by reasonable application of smoke-prevention methods. The work of the commission has already demonstrated that a vast amount of smoke can be prevented.

The Bureau of Mines published two reports in 1912, one on "The Smokeless Combustion of Coal in Boiler Furnaces," with a chapter on "Central-Heating Plants," by D. T. Randall and H. W. Weeks; the other on "The Smoke Problem at Boiler Plants," by D. T. Randall. These in-

vestigations were begun by the U. S. Government to determine the most efficient methods of utilizing the coals of the United States.

An International Smoke Abatement Exhibition was held in London March 23-April 4, 1912, under the presidency of the Duke of Argyll and the auspices of the Coal Smoke Abatement Society. At this exhibition it was planned to show all the recognized means of diminishing or abolishing factory and domestic smoke. The Coal Smoke Abatement Society also arranged a series of conferences on the subject, in connection with the exhibition, and municipalities and societies interested in the abatement of smoke sent delegates.

The International Association for the Prevention of Smoke met in Indianapolis, Sept. 28-29. Jacob P. Brown, city smoke inspector of Indianapolis, was elected president, and John Krause, Cleveland, O., secretary.

BILLBOARDS

Ohio is the first state to attempt to cope with the billboard nuisance by way of a constitutional provision. The recent Constitutional Convention prepared and submitted to the electors the following amendment:

Laws may be passed regulating and limiting the use of property on or near public ways and grounds for erecting billboards thereon and for the public display of posters, pictures and other forms of advertising.

This amendment authorizes the passage of laws, regulating and limiting the use of property on or near public ways and grounds for display posters and advertising. It enlarges existing legislative power, and is designed to obviate the possible objection that such legislation was unconstitutional. At the election on Sept. 3 the amendment was defeated.

St. Louis.—The St. Louis ordinance regulating billboards provides that they should not exceed 14 ft. in height or 500 sq. ft. in total area; should have an open space of at least 4 ft. from the lower edge to the ground, and should not approach nearer than 2 ft. to another building, or than 6 ft. to the lot line, and not

be nearer the street than the building line of the lot, nor in any case nearer than 15 ft. The validity of the ordinance was upheld by the supreme court of Missouri in the case of *St. Louis Gunning Advertisement Company v. St. Louis*, 137 S. W. 929, which has been removed (see *AMERICAN YEAR BOOK*, 1911, p. 259) on a writ of error to the Supreme Court of the United States.

Kansas City has been having a similar experience. It recently received a favorable opinion upholding its ordinance in Division One of the Supreme Court, but inasmuch as there was a dissenting opinion and the Missouri law provides that where there is a dissenting opinion the matter shall be submitted to the court *en banc*, the rendering of a final opinion has necessarily been postponed. In the meantime the civic bodies are undertaking a very active campaign for the enforcement of this ordinance as the appeal will not interfere with that, and are also advocating an annual tax based on the lineal or square-foot unit of charge both as a regulatory measure and as a means of providing for thorough inspection.

Boston has furnished a precedent for outwitting obnoxious billboards, a battery of which had been erected on vacant lands near the Boylston St. entrance to the Fens. The park board planted Lombardy poplars, set close together, to screen out all view of the billboards and render the intrusion a vain one. The trees are young, but a little growth will accomplish the purpose. On Fellsway, the Metropolitan parkway in Malden, the Metropolitan Park Commission has built a high fence in front of billboards with like intent.

Washington, D. C., furnishes an interesting example of a definite, intelligent effort to suppress billboards. Under an act of Congress the commissioners of the city are given power to permit the erection of billboards, and are also given authority to place restrictions upon the exercise of that permission. For a considerable time after the enactment of that law the commissioners authorized the erection of billboards and signs so far as their statutory powers extended; but later became convinced

that the prevalence of that means of advertising was not consistent with the best civic policy, and accordingly on July 20, 1909, issued the following order, since which no billboards have been erected with their consent:

That in all cases where the Commissioners possess discretion in the matter they will hereafter refuse to issue permits to place, exhibit, maintain, or continue advertisements or posters in the District of Columbia; that all permits already issued for such advertisements or posters that can legally be revoked be revoked; and the Corporation Counsel is directed to advise the Commissioners as to their power to revoke such permits for billboards and signs as in their judgment ought no longer to be maintained.

On Oct. 4, 1911, the following supplemental order was made:

That no additional billboards shall be erected; but billboards now erected may be used until the Commissioners deem their removal necessary or desirable.

That those signs which are subject to the approval of the Commissioners and are now in existence may be repainted; but neither the wording nor designs thereon may be changed.

The only signs whose erection the commissioners permit is where a building occupied or intended for business purposes is in course of demolition or construction. In such cases a canvas sign giving notice of the time when the business will be resumed, or some such announcement, may be fastened to the temporary protecting fence in front of the structure during the progress of the work.

The courts have also held that a temporary canvas sign attached flatly and closely to the side of a house without any framework or other rigid construction as a part of it is not a matter subject to the consent of neighbors or the discretionary jurisdiction of the commissioners, if it relates to the conduct of the business within; but signs may not be painted or attached to the walls of buildings for the purpose of advertising the business conducted within such buildings which contain mention of special proprietary goods, without the consent of the contiguous residents and the approval of the commissioners.

VII. MUNICIPAL GOVERNMENT

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STATISTICS OF CITIES OF 50,000 POPULATION OR OVER

The figures in the following table, courteously supplied by the treasurers or comptrollers of the various cities, are the latest available. They relate in general to the fiscal year ending in 1912; in the case of cities whose fiscal year coincides with the calendar year, the figures are for the year ending December 31, 1911.

	Population, 1910	Assessed Value of Property, thousands	Tax Rate per \$1,000	Bonded Indebted- ness	Sinking Fund or Surplus	Total Receipts	Total Expendi- tures
Akron, Ohio. . . .	69,067	\$81,658	\$12.30	\$1,102,980	\$224,220	\$641,310	\$590,674
Albany, N. Y. . . .	100,253	77,958	2.04	5,418,914	1,532,424	3,674,548	3,182,179
Allentown, Pa. . . .	51,913	38,373	14.40	487,900	68,392	...	...
Altoona, Pa.	52,127	25,200	2.25	1,927,000	319,000	317,796	295,555
Atlanta, Ga.	154,839	135,101	12.50	6,181,700	1,046,000	3,088,548	4,644,659
Baltimore, Md. . . .	558,485	723,800	18.90	64,803,891	40,659,523	17,202,261	23,580,038
Bayonne, N. J. . . .	55,545	48,828	22.55	3,771,650	682,945	...	...
Birmingham, Ala. . .	132,685	71,682	10.00	5,865,400	70,000	1,339,455	1,442,514
Boston, Mass.	670,585	1,428,344	16.40	73,474,232	43,567,856	38,739,388	33,341,529
Bridgeport, Conn. . .	102,054	97,683	15.40	2,159,300	580,108	2,041,783	1,903,593
Brockton, Mass. . . .	56,878	49,572	19.70	3,409,350	589,575	2,723,255	2,540,234
Buffalo, N. Y.	423,715	322,760	21.6763	28,895,860	3,502,033	15,966,097	18,014,574
Cambridge, Mass. . . .	104,839	115,947	20.40	8,457,250	2,332,108	3,331,291	3,523,290
Camden, N. J.	94,538	51,426	20.00	4,698,950	964,626	1,854,824	2,178,458
Canton, Ohio.	50,217	56,561	4.90	969,812	124,412	275,052	258,707
Charleston, S. C. . . .	58,833	19,460	25.25	4,154,049	5,549	763,764	825,934
Chicago, Ill.	2,185,283	928,974	50.81	26,829,647	2,740,734	23,053,282	23,030,628
Cincinnati, Ohio. . . .	363,591	506,559	15.00	56,750,748	838,553	11,805,667	13,583,945
Cleveland, Ohio. . . .	560,663	714,804	13.60	33,836,593	1,790,139	13,001,677	11,740,317
Columbus, Ohio.	181,511	235,660	13.50	14,375,600	3,076,302	5,717,246	5,853,582
Covington, Ky.	53,270	27,592	17.50	2,187,000	None	944,225	956,791
Dallas, Texas.	92,104	89,218	18.20	4,434,500	715,024	2,632,613	3,119,549
Dayton, Ohio.	116,577	143,230	13.60	4,790,044	108,048	2,994,707	2,934,247
Denver, Colo.	213,381	135,467	12.50	1,499,500	582,381	2,507,619	2,266,963
Des Moines, Ia.	86,368	22,684	86.70	1,466,661	65,801	1,193,553	1,417,792
Detroit, Mich.	465,766	456,816	19.95	7,149,756	2,806,933	13,359,672	11,985,155
Duluth, Minn.	78,466	43,601	16.25	2,476,000	99,057	2,163,764	2,034,358
East St. Louis, Ill. . .	58,547	13,416	62.60	712,500	...	...	...
Elizabeth, N. J.	73,409	60,184	1.66	3,299,850	312,026	1,697,063	1,620,243
Erie, Pa.	66,525	26,668	13.00	773,155	499,333	...	...
Evansville, Ind.	69,647	40,000	29.40	1,725,000	50,000	854,571	754,310
Fall River, Mass. . . .	119,295	94,909	19.20	7,388,917	2,463,346	3,617,800	3,678,936
Fort Wayne, Ind. . . .	63,933	31,681	1.08	560,800	132,504	476,004	464,830
Fort Worth, Tex. . . .	73,312	60,232	19.30	5,241,000	262,000	1,323,248	1,996,467
G. d Rapids, Mich. . . .	112,571	93,235	17.005	4,432,600	293,978	4,396,811	4,656,823
Harrisburg, Pa.	64,186	47,274	9.60	1,912,900	336,228	1,216,130	1,131,732
Hartford, Conn.	98,915	144,214	19.75	5,258,481	622,226	2,617,255	2,565,252
Hoboken, N. J.	70,324	69,496	20.12	2,785,719	450,180	...	...
Holyoke, Mass.	57,730	57,530	16.00	3,355,100	514,580	2,662,114	2,677,955
Houston, Texas.	78,800	77,294	17.00	5,895,000	190,525	1,910,019	1,835,938

* From taxes only.

VII. MUNICIPAL GOVERNMENT

STATISTICS OF CITIES OF 50,000 POPULATION OR OVER—Continued

	Population, 1910	Assessed Value of Property, thousands	Tax Rate per \$1,000	Bonded & Indebted- ness	Sinking Fund or Surplus	Total Receipts	Total Expendi- tures
Indianapolis, Ind.	233,650	\$218,151	\$9.30	\$3,445,300	\$799,950	\$2,115,375	\$2,365,009
Jacksonville, Fla.	57,699	36,343	17.00	26,633,253	5,952,284	.....	.....
Jersey City, N. J.	267,779	257,640	22.00	27,223,754	6,070,000	11,901,355	11,560,971
Johnstown, Pa.	55,482	19,643	12.00	546,000	257,419	524,912	434,600
Kansas City, Kan.	82,331	89,374	9.15	2,346,278	146,911	.....	.....
Kansas City, Mo.	248,381	165,322	12.50	6,344,000	1,263,493	5,178,253	4,664,768
Lawrence, Mass.	85,892	70,836	17.60	2,678,200	133,201	.....	.....
Los Angeles, Cal.	319,198	442,302	15.40	35,427,537	2,198,710	21,015,609	14,403,013
Louisville, Ky.	223,928	185,000	17.90	11,814,200	754,159	5,462,722	4,225,420
Lowell, Mass.	106,294	81,581	18.90	3,482,076	1,018,386	.....	.....
Lynn, Mass.	99,336	1,608	19.40	4,569,100	1,183,882	5,148,864	4,929,858
Manchester, N. H.	70,063	41,451	20.10	1,160,693	771,060	1,697,772	1,652,973
Memphis, Tenn.	131,105	103,257	15.90	11,301,600	.....	.....	.....
Milwaukee, Wis.	333,857	442,932	11.66	10,731,100	862,750	12,926,000	12,400,353
Minneapolis, Minn.	301,408	198,910	30.00	16,949,900	3,896,775	11,455,742	10,609,584
Mobile, Ala.	51,521	32,216	11.00	3,868,500	100,679	1,144,255	951,245
Nashville, Tenn.	110,364	64,795	*15.00	5,869,806	.....	2,455,782	2,400,303
Newark, N. J.	347,460	363,868	19.70	28,210,200	7,496,137	23,012,732	22,602,011
New Bedford, Mass.	96,652	95,573	18.40	8,191,752	2,035,119	4,959,558	4,905,634
New Haven, Conn.	133,605	131,658	17.50	3,697,000	2,354	3,107,482	3,071,625
New Orleans, La.	339,075	233,377	22.00	38,828,004	.....	8,340,778	8,642,756
New York, N. Y.	4,766,883	8,216,763	17.22	1,037,811,718	285,039,505	519,443,181	513,225,551
Norfolk, Va.	67,452	66,549	8.00	9,146,550	1,079,160	1,742,771	1,740,172
Oakland, Cal.	150,174	129,771	17.50	5,530,840	None	4,924,084	4,386,907
Oklahoma C'y, Ok.	64,205	95,173	17.80	3,741,000	125,000	999,118	764,689
Omaha, Neb.	124,096	145,805	12.58	6,070,000	None	7,230,835	6,722,155
Passaic, N. J.	54,773	37,516	14.90	1,797,250	90,536	1,432,290	1,297,583
Paterson, N. J.	125,600	101,993	16.60	4,475,500	715,011	4,919,903	4,816,403
Pawtucket, R. I.	51,622	49,212	16.50	5,514,000	1,271,683	2,123,683	2,270,289
Peoria, Ill.	66,950	20,829	15.80	579,000	100,616	535,179	582,560
Philadelphia, Pa.	1,549,008	1,535,815	10.00	95,828,600	14,001,200	53,162,546	46,300,889
Pittsburgh, Pa.	533,905	746,598	16.70	42,398,434	12,552,992	13,268,893	12,865,671
Portland, Me.	58,571	64,204	22.40	2,969,121	273,410	4,161,700	3,880,120
Portland, Ore.	207,214	296,199	6.80	11,494,500	528,349	14,903,642	13,338,763
Providence, R. I.	224,326	313,663	16.50	19,546,000	8,080,765	8,225,750	7,929,661
Reading, Pa.	96,071	54,820	10.00	1,318,000	225,253	696,574	664,795
Richmond, Va.	127,628	140,711	14.00	11,449,459	2,574,813	4,103,112	3,735,810
Rochester, N. Y.	218,149	166,916	19.51	11,740,600	1,131,037	8,228,027	7,531,010
Saginaw, Mich.	50,510	27,245	21.83	2,288,640	173,349	1,854,824	2,178,458
Salt Lake C'y, Ut.	92,777	61,163	38.70	4,398,000	24,717	1,985,634	2,105,651
San Antonio, Tex.	96,614	88,674	10.60	2,098,000	416,402	778,149	769,941
San Francisco, Cal.	416,912	604,810	20.00	27,077,300	18,536	13,205,389	12,887,626
Savannah, Ga.	65,064	51,175	13.90	2,648,150	33,000	1,191,670	1,182,913
Schenectady, N. Y.	72,826	48,632	22.60	4,188,137	858,848	2,554,591	2,626,855
Seranton, Pa.	129,867	81,555	12.51	1,281,000	580,554	.....	.....
Seattle, Wash.	237,194	211,887	30.85	12,744,380	None	20,398,776	20,616,024
Somerville, Mass.	77,236	67,767	19.10	1,519,000	.....	2,798,516	2,795,976
South Bend, Ind.	53,684	27,692	12.90	474,500	6,871	659,559	663,462
Spokane, Wash.	104,402	91,934	13.00	9,410,944	67,259	5,493,855	5,242,036
Springfield, Ill.	51,678	17,677	53.10	798,700	8,441	343,215	346,113
Springfield, Mass.	88,926	149,530	15.50	6,886,700	968,067	4,675,980	4,802,955
St. Joseph, Mo.	77,403	39,215	13.50	1,318,000	225,253	696,574	664,795
St. Louis, Mo.	687,029	597,383	22.20	25,856,690	2,473,853	15,564,626	14,565,151
St. Paul, Minn.	214,744	126,286	20.32	10,197,000	408,521	6,950,883	7,025,464
Syracuse, N. Y.	137,249	109,993	18.94	10,208,265	None	6,475,052	6,332,811
Tacoma, Wash.	83,743	69,299	12.00	5,171,000	159,163	8,954,808	8,077,878
Terre Haute, Ind.	58,157	32,989	11.70	592,000	35,811	500,912	396,879
Toledo, Ohio.	168,497	217,000	7.21	9,878,609	1,994,258	4,412,405	4,397,813
Trenton, N. J.	96,815	73,393	21.00	6,954,291	1,915,242	.....	.....
Troy, N. Y.	76,813	58,486	24.16	4,672,069	233,083	3,713,497	3,329,258
Utica, N. Y.	74,419	44,404	19.36	1,988,257	359,626	2,365,156	2,497,268
Washington, D. C.	331,069	331,454	15.00	8,258,550	None	15,206,434	14,807,681
Waterbury, Conn.	73,141	63,500	16.00	3,290,000	69,447	2,744,637	2,500,108
Wichita, Kan.	52,450	65,458	15.70	4,119,948	None	2,287,845	2,287,379
Wilmington, Del.	87,411	55,453	15.30	3,851,100	None	1,328,545	1,237,402
Wilkes-Barre, Pa.	67,105	54,272	7.00	1,171,700	150,824	.....	.....
Worcester, Mass.	145,986	153,058	17.20	11,202,625	4,662,720	5,810,755	5,145,115
Yonkers, N. Y.	79,803	79,841	28.99	8,844,471	.....	.....	.....
Youngstown, Ohio	79,066	131,330	10.80	2,110,487	127,281	1,692,586	1,758,540

* \$15.00 old territory; \$13.00 new territory. † Three classes of property taxed, \$2.51, \$4.68, and \$7.30, per \$1,000, respectively. ‡ In addition to the total assessed valuation figures, there is also \$24,410,300 known as "Money and Credits," which is taxed on a 3-mill flat rate, one-third going to schools, one-third to general city revenue, and one-third to the state.

VIII. TERRITORIES AND DEPENDENCIES

FRANK MCINTYRE

ALASKA

Cunningham Claims.—There has been no marked change in the economic conditions of Alaska during the last year. The so-called Cunningham Alaska coal claims, which contributed largely to the Ballinger-Pinchot controversy (see *AMERICAN YEAR BOOK*, 1911, pp. 53, 263), were finally disposed of. The appeals were adversely decided by the Secretary of the Interior, who directed immediate execution of the order for the cancellation of the entries. The lands involved are now a part of the public domain and the amount paid into the United States Treasury by the claimants, \$52,800, is forfeited and cannot be recovered except under an act of Congress. There can be no appeal from the decision of the Secretary of the Interior so far as the cancellation of the claim is concerned.

Government.—In August, 1912, Congress passed an act creating a legislative assembly for the Territory of Alaska and fixing the City of Juneau as the seat of the territorial government. The assembly thus created consists of a senate and house of representatives. The senate is composed of two members from each of the four judicial districts of Alaska, or eight members in all, who must have at the time of election the qualifications of an elector in Alaska and must have been an inhabitant and a resident of the district from which chosen for at least two years prior to the date of election. The term of office of senators is four years. The house of representatives is composed of four members from each of the judicial districts, or 16 members in all, with the same qualifica-

tions as prescribed for members of the senate. The term of office is two years.

The first election under this act was held on Nov. 5, 1912, and the first session of the legislative assembly is to convene on the first Monday in March, 1913. The legislature may remain in session not longer than 60 days in any two years, unless convened in extraordinary session for a period not exceeding 15 days by the governor when so requested by the President of the United States, or when required by public danger or necessity. The powers of the legislature are strictly defined. The power of veto is vested in the governor, and in addition, all laws passed must be submitted to Congress and, if disapproved, become null and void. The legislative expenses are to be met from funds appropriated annually by Congress.

Education.—Several new white schools were established during the year in districts outside of the 16 incorporated towns and territories. A good standard of instruction is maintained in the schools. The *per capita* cost of public instruction is relatively high because of the small number of children of school age in most of the settlements. Schools for natives are conducted by the Bureau of Education, under the Department of the Interior. Educational work among the natives is hampered by the lack of means of enforcing attendance. A compulsory school attendance bill passed the Senate at the last session, but was not taken up in the House. (See also XXXIV, *Education*.)

Industries.—Complete statistics are in general available only to include 1911. The mineral output of Alaska

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for that year was valued at \$20,650,000, of which \$16,104,310 was of gold and silver. The most notable thing connected with mining was the large increase in the output of copper. Placer gold mining has declined so seriously that the general prosperity of the interior of the territory has been seriously affected. On the other hand, there has never been so much activity in the gold-quartz mining in southeastern Alaska as now. During the last session Congress attempted to avoid some of the evils of the former mining laws for Alaska by an act restricting association of placer mining claims to not to exceed 40 acres, while, until patent is issued, \$100 worth of labor must be performed or improvements made every year for each 20 acres included. The same law restricts powers of attorney to two for any one person in any one month.

Statistics for 1911 show that there were 17,932 persons engaged in the fishery industries of Alaska, or an increase of over 2,000 from the preceding year. The total investment for the same period, exclusive of the off-shore cod and halibut fisheries, was \$22,617,387, of which more than 90 per cent. was in the salmon canning business. In 1911 there were 64 canneries in operation and there were 24 new canneries established in 1912. The export value of the prepared products for 1911 was \$16,863,728. (See also XIX, *Fisheries*.)

The total value of Alaskan furs for 1911 was \$802,750, of which \$432,231 represented the value of seal skins. Congress, at the last session, prohibited killing surplus male seals, after setting aside the breeding reserve, for five years to come. During the close period seals may be killed for food purposes only. Under the 15-year convention between the United States, Great Britain, Russia and Japan, which became effective in December, 1911, there was no pelagic sealing during 1912.

Railroads and Roads.—Congress, at the last session, authorized an examination and report by a board of experts on feasible railroad routes from tide-water to the interior of Alaska. For the present, most of the transportation and communica-

tion is dependent upon wagon roads and trails constructed by the Alaskan Road Commission, which, since its organization to July 31, 1912, has constructed 829 miles of wagon road, 593 miles of winter-sled road, and 1,527 miles of trails, at an approximate cost of \$2,215,000.

Commerce and Exports.—There was a marked increase during the last fiscal year in the commerce of the Territory, the total value for the fiscal year, 1912, reaching \$62,680,507. The exportation of Alaskan products to the United States for the last three fiscal years has been as follows:

	1910	1911	1912
Gold.....	\$18,275,434	\$15,081,620	\$17,156,989
Fish and fish products...	10,404,807	11,175,712	14,300,240
All other merchandise	1,949,307	2,638,112	7,297,472

GUAM

The report of the commander of the naval station, who is the governor, shows that the general condition of Guam remains satisfactory. The best signs of advance are the increased exports, the new buildings, and a greater area in crops planted. The governor recommends a change in the laws so that the products and importations of Guam may enter the United States and its possessions free of duty, with the exception of tobacco, sugar, and other articles of produce of the United States possessions upon which restrictions on import into the United States are elsewhere provided.

Education.—The condition of the public schools has improved. One new school building was built during the year and playgrounds are being arranged for all school children. Thirty teachers are employed. The total number of pupils registered is 1,560.

Sanitation.—The general health of the natives is believed to be improving, due to the gradual betterment of hygienic conditions in all parts of the island. An elementary course in hygiene has been made a part of the instruction of the public schools

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and the medical officers have continued their fight against gangosa, tuberculosis, hookworm, and other intestinal parasites. Practically every native adult and child is infected with one or more intestinal parasites, due largely to the scarcity of water and to their unclean habits. About one-sixth of the adult native inhabitants of Guam have pulmonary tuberculosis, and notwithstanding the advice given them as to diet and mode of life, 64 deaths occurred during the year from various forms of the disease. Three deaths occurred from leprosy, and two new cases were discovered, leaving 23 cases in Tumon Colony. The removal of the lepers to the Culion Colony in the Philippine Islands has been recommended.

Commerce and Industries.—The total imports for the last year amounted to \$129,449.27, the imports from the United States having doubled. The exports reached \$60,674.10, mostly of copra, the production of which was increased.

HAWAII

The marked prosperity and progress noted in Hawaii for the past several years increased during the last year, which was otherwise uneventful for this territory. There were no political changes of importance. The demand for laborers still continues.

Education.—The last year was of importance in the school history of Hawaii, which extends back over a period of 90 years. The public school system comprises a normal school, two high schools, three industrial schools and 151 schools of primary and grammar grades. There is also a summer school for teachers and a college of agriculture and mechanic arts. Industrial training forms an important part of the instruction. There are 51 private schools.

A new method of financing the schools, under which their needs will be estimated and the required amount raised by a special tax each year, instead of depending upon the ordinary revenues, was inaugurated. At the close of the year there were 29,909 pupils enrolled, an increase of

3,787 for the year. (See also XXXIV, *Education*.)

Health and Sanitation.—Following a case of yellow fever, the first ever known in these islands, a special mosquito campaign was inaugurated at Honolulu and the city was practically cleared of the yellow fever mosquito, and to a large extent of other varieties. A vigorous campaign was also conducted against rats in consequence of plague having been found in certain districts in the Island of Hawaii.

Industries.—The sugar industry remains of first importance. The crop for the last year was 595,258 short tons, the largest in the history of the Islands. Of the lesser industries, pineapple production has now reached first place and is growing rapidly. The output for the year is estimated at about 1,000,000 cases of 24 cans each. The area of cultivation is being constantly extended and new canneries are being established. The total value of the external trade for the year was \$84,143,760.

The following table shows the values of the principal local products shipped from Hawaii to the United States and foreign countries in the last three years:

	1910	1911	1912
Sugar....	\$42,626,069	\$36,704,656	\$49,961,536
Coffee....	288,423	346,507	397,761
Fruit and nuts....	1,775,050	2,173,218	2,948,733

PHILIPPINE ISLANDS

The general condition of peace and good order, existing now for several years, was maintained unbroken during the last year. The general order for disarmament of the Mohammedans of the Moro province, issued in September, 1911, was enforced and disarmament has been practically completed with but little bloodshed.

Political Conditions and Legislation.—There was no important federal legislation in the interest of the Philippine Islands during the last year. A bill, granting practically complete independence to the islands for a period of eight years and complete independence thereafter, was introduced during the last session of Congress and favorably reported by

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the Democratic majority of the Committee on Insular Affairs to the House, but was not taken up for consideration on the floor. The introduction of this bill, followed by Democratic victory at the polls, has served to increase the political unrest in the islands and to encourage that part of the native population which is actively seeking independence. The insular legislature enacted several laws of importance to the Philippines, but failed to pass a general appropriation bill. The expenses of the government for the current year must therefore be met under the provisions of the organic act of Congress, which automatically extends the appropriations of the preceding year whenever the Philippine legislature fails in its duty in this way.

Education.—The steady progress in education continued. There was an enrollment of 529,855 Filipino pupils during the year. A marked feature of the educational system in the Philippines is in the industrial and vocational training courses which are now provided in nearly all public schools. There is an enrollment of nearly 450,000 pupils in these courses, while the opportunities afforded for industrial training of this kind compare favorably with the most advanced of the states. It is still estimated, however, that only about one-third of the Filipino children of school age are being reached. (See XXXIV, *Education*.)

Public Works.—The extension of public works throughout the archipelago continued. Particular attention was given to the construction of new roads and to the building of municipal school houses and market places. The insular government is handicapped in this respect by the lack of funds for the execution of work of this character, Congress not having as yet authorized an increase in the limit of \$5,000,000 now fixed as the bonded indebtedness of the

Philippine government for public works. Until this limit is extended by act of Congress, all expenditures for public works must be made from the ordinary insular revenues.

Health and Sanitation.—Notwithstanding that neighboring countries suffered from epidemics of plague and cholera, and the severe drought which affected almost the whole Orient, continued improvement in the health conditions of the Philippines was shown during the last year. A vigorous campaign was waged against the animal disease, rinderpest, and this disease, which killed over 600,000 work animals in a single year ten years ago, has almost ceased to be an important factor in the industrial economy of the Islands.

Commerce and Industries.—The Islands showed continued and satisfactory progress commercially and industrially during the last year. The total volume of trade reached in value \$104,869,816, being an increase of 17 per cent. over the preceding year. Hemp, which has hitherto held first place in Philippine exports, fell to second place, being displaced by copra, which was exported to a value of over \$16,000,000 and showed a gain of over \$6,000,000 over 1911. There was also an increased exportation of sugar and tobacco.

The agricultural possibilities of the Philippines are immense, and the slow regular growth is perhaps a better sign of true progress than would be more spectacular increases. Nevertheless the need of capital in the Islands is manifest to open up the undeveloped and uninhabited portions of the Islands and to incite the masses of the natives to industrial activity on their own account by encouraging higher standards of living. Much has been done in this respect since the American occupation but much more remains to be done. The increase in trade is shown by the following table of imports and exports:

	1909	1910	1911	1912
IMPORTS:				
From the U. S.	\$4,691,770	\$10,775,301	\$19,483,658	\$20,604,155
From other countries	23,100,627	26,292,329	30,350,064	33,945,825
EXPORTS:				
To the U. S.	\$10,215,391	18,741,771	16,716,956	21,517,777
To other countries	20,778,232	21,122,398	23,061,673	28,802,069

PORTO RICO

The last year has been one of exceptional progress and achievement both in the public and private activities, even for Porto Rico which has shown such continued advancement under American control. During the year just passed progress was shown along almost every line of governmental and industrial endeavor.

Political Conditions.—The demand for United States citizenship on the part of Porto Ricans continues to be emphasized in Porto Rico and denied in the United States. This is a grant that has been repeatedly recommended by the War Department and successive Presidents, promised in the platforms of both great political parties, and was included in a bill passed by the House of Representatives, which is awaiting action in the Senate. The failure to grant this favor, which has come to be regarded as a right in Porto Rico, is regarded by most observers familiar with conditions in the Island as practically the only cause of political unrest there.

Legislation.—There was no federal legislation of importance to Porto Rico during the year. The insular legislature, however, passed several laws of exceptional importance to the central government of the island. Among these are a provision for an improved and non-partisan insular sanitary service, the establishment of a bureau of labor with authority to investigate controversies and exercise its good offices in disputes between employers and employees, an amendment to the election laws so as to insure secrecy of the ballot and possibly to provide for minority representation in the house of delegates, which forms the lower chamber of the insular legislature. These are all matters that have heretofore been urged as subjects for federal legislation.

Education.—The enrollment of pupils in the public schools reached, in 1912, the number of 160,657, an increase of more than six fold since the first year of American administration, and a gain of 10 per cent. over the preceding year. There are now 1,168 public school buildings in

the Island. Marked attention is now being devoted by the Commissioner of Education in Porto Rico to the development of industrial and vocational training in the schools. (See also XXXIV, *Education*.)

Health.—The record heretofore maintained by Porto Rico for exceptional freedom from serious epidemics was broken last June when a case of bubonic plague was discovered in an outlying district of the capital city of San Juan. The prompt discovery of the disease, however, and the frank proclamation of its presence, together with the stringent measures adopted to prevent its spread, kept the disease throughout under sharp control. The Medical Department of the Army and the U. S. Public Health Service rendered important aid in the emergency. There was a total of 30 cases and 11 deaths reported to June 24, and sporadic cases appeared from time to time thereafter until the last known case, which was reported on Sept. 11.

Industries and Commerce.—The external commerce of Porto Rico reached an aggregate of \$92,631,886 for the year, an increase of 17 per cent. over 1911, the highest percentage of increase yet recorded. Eighty-seven per cent. of this trade was with the United States. Porto Rico purchased during the year from the mainland markets of the United States merchandise to the value of \$37,424,545, an amount in purchases exceeded by but eleven countries of the world. There was a substantial increase in all of the island's agricultural products and the acreage under cultivation was again largely extended. Fruits which had no commercial importance prior to 1903, were exported to a value of \$2,377,762, covering oranges, pineapples, and grape-fruit. A notable sign of progress was in the coffee industry, which, emerging from the period of depression that followed the disastrous hurricane of 1899, during the last year showed the largest production and exportation yet reached. The value of coffee sold abroad during the year was over \$6,000,000. The following table shows the exports of the principal productions of Porto

VIII. TERRITORIES AND DEPENDENCIES

Rico for the year and, comparatively marked material progress of the with preceding years, reveals the Island:

	Average 5 years pre- ceding 1910	1910	1911	1912
Sugar.....	\$15,000,820	\$23,545,922	\$24,479,286	\$31,544,270
Coffee.....	3,667,093	5,669,602	4,992,779	6,754,913
Tobacco and its products.....	5,473,273	5,763,214	5,396,783	7,439,042
Fruits and nuts.....	793,689	1,635,817	2,073,994	2,377,763
All others.....	372,832	1,343,664	2,946,310	1,576,390

TUTUILA

The Islands of Tutuila and Manua, styled officially "Naval Station, Tutuila," are now known as American Samoa in accordance with the recommendations of the present and previous governors. The seat of government is at the Naval Station in Pago Pago Bay. The past year has been uneventful.

Education.—The foundation of the school system is the parish school conducted by the native pastors and over which there is no governmental supervision. The children attend four days of the week from one to three hours a day. The only government school is in the Naval Station. The law provides for the compulsory education of children between the ages of six and 13 years. The islands' revenues are not sufficient to erect schoolhouses and employ teachers, but the need of trained teachers is manifest. An effort was made during the year to improve the condition of the schools, but it is still unsatisfactory, and the last report of the governor calls attention to the urgent need of a better system and recommends that the public schools be taken over by the Commissioner of Education, in accordance with a plan submitted in January, 1912.

Roads.—There is still need for im-

provement in the roads. During the past year 8½ miles of road have been built and 6½ miles rebuilt, out of a total of about 56 miles of public roads constructed since the establishment of the government.

Population.—The population of American Samoa is 7,251, an increase of 471 over 1908, believed to be due largely to the improved methods of hygiene, the education of the natives in sanitation, the use of the hospital, and the care of the sick given by the Navy medical officers.

Health.—The general health of the natives of American Samoa during the past year has been good. The medical work is in charge of the Navy medical officers, the work of caring for the sick being performed by the Samoan Hospital recently constructed. Since the epidemic of measles in 1911, tuberculosis has been increasing, but the disease is receiving the careful attention of the Board of Health.

Finances.—The finances are in good condition. There is no public debt. The crop of copra is still being handled by the Government and was larger last year than ever before. The copra contract was awarded at a price of \$93.75 per ton, an increase of \$11.13 per ton over the 1911 contract price.

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IX. LAW AND JURISPRUDENCE

JOHN B. SANBORN

LEGISLATION

FEDERAL LEGISLATION

Congress.—The second session of the 62d Congress met on Dec. 4, 1911, and continued in session until Aug. 26, 1912. This was the regular session of Congress, the first session being the special one called in April, 1911, to consider Canadian reciprocity. Conditions were not favorable to the enactment of any amount of important legislation. The Democrats had control of the House, while neither party had a working majority in the Senate. In addition, the time of many members was largely occupied both by the pre-convention campaign, which began early in the year and continued until almost the end of June, and by the regular campaign which was in full swing at the time of the adjournment of Congress.

The legislation of Congress will be considered more in detail under other divisions of the YEAR BOOK; it is the intention here to note only its general tendencies.

Police Power.—The principle is commonly laid down in the text-books that the police power is vested in the states and that the federal Government has no such general power. It has been noticeable, however, that Congress has been exercising for some time, through its control over interstate commerce and the mails, a supervision over the public health and morals which is in every way analogous to the police power exercised by the states. This tendency is illustrated in the Congressional legislation of the past year by the act of July 31, which prohibits the carrying in the mails or from one state to another in interstate commerce any

film or other representation of a prize fight which is to be used for public exhibition. The Post Office Appropriation Act of Aug. 24 contains a provision that all newspapers using the mails shall file with the Postmaster-General and publish a sworn statement giving the names of the editors, publishers, managers and owners, and, if owned by a corporation, the stockholders and the bondholders or security holders. It is also required that all matter for which any money or other consideration is paid shall be marked "advertisement." The constitutionality of this act is to be tested in the courts. (See also XXXIII, *Journalism*.)

STATE LEGISLATION

Legislatures in Session.—The even numbered years are those in which only a comparatively few state legislatures meet. In 1912 there were regular annual sessions in Georgia, Massachusetts, New Jersey, New York, Rhode Island, and South Carolina; regular biennial sessions in Kentucky, Louisiana, Maryland, Mississippi, and Virginia; and special sessions in Arizona, California, Illinois, Maine, Michigan, Minnesota, Nevada, and Wisconsin.

Legislative Tendencies.—The legislation of the year continues along very much the same lines as in recent years. The subjects on which the most frequent enactments are found are the control of quasi-public corporations, the regulation of the public health, the position of the laborer, and the structure and method of government. The great bulk of

state legislation, which has been so noticeable a phenomenon of recent years, is in no way diminished in the session laws of 1912. The same tendency toward a minute regulation of the subjects over which the powers of the state legislatures are exercised is also seen in these laws. An extreme instance of this is the act of Mississippi prohibiting tipping in hotels, restaurants, or on trains.

Corporations.—One of the most important laws relating to corporations is that enacted in New York allowing their creation with shares of stock which have no par value, but which represent simply a certain share in the property of the corporation. In Massachusetts, for the first time, the formation of corporations to deal in lands has been authorized. The new state of Arizona has given very large powers to the corporation commissioner by requiring his approval of an enterprise before stock can be sold.

Real Estate.—A noticeable tendency in the legislation of the year is further to simplify the forms of conveyancing and to do away with the technical rules regarding the effect of transfers of real estate.

Uniform State Legislation.—The twenty-second Conference of Commissioners on Uniform State Laws met at Milwaukee, Wis., Aug. 21-26. Charles T. Terry of New York was elected president to succeed Walter G. Smith of Pennsylvania. The time of the conference was largely taken up in the consideration of the proposed amendments to the negotiable instruments law, the draft of an act on the subject of marriages in another state or country in evasion or violation of the laws of the state of domicile, the third tentative draft of an act to make uniform the law of the incorporation of business corporations, the draft of a Workmen's Compensation Act, the discussion of the Uniform Partnership Act, the Torrens system of the registration of land titles, and the report of the committee on the *situs* of real and personal property for purposes of taxation.

The proposed amendments to the negotiable instruments law were recommended to the committee on com-

mercial law for further consideration and report in 1913. The draft of an act relating to and declaring void marriages in another state or country in evasion or violation of the laws of domicile was finally approved by the Conference. The third tentative draft of an act to make uniform the law of the incorporation of business corporations was considered at length and recommitted to the committee on uniform incorporation law for further consideration. The draft of a uniform Partnership Act was recommitted to the committee on commercial law with directions to report at the next meeting of the Conference; and the committee was further authorized, in its discretion, to prepare and report a uniform Limited Partnership Act. The Compulsory Workmen's Compensation Act offered by the special committee on compensation for industrial accidents was approved tentatively, and the committee continued. The report of the committee on the *situs* of real and personal property for the purposes of taxation was discussed at length, and received, and the committee continued with instructions to give further consideration to the subject, and to report at the next Conference.

The uniform Bills of Lading Act was adopted during 1912 in Louisiana; the uniform act relating to wills executed without the state in Louisiana; and the uniform Warehouse Receipts Act in the Philippine Islands. The Senate passed a Bills of Lading Act substantially similar to that recommended by the commissioners for the states, but no action had been taken on it in the House during the second session of the 62d Congress (see also XIII, *Economic Conditions and the Conduct of Business*).

PRIVATE INTERNATIONAL LAW¹

Conferences.—The conference assembled at Berne, in August, 1911,

¹ The treatment of this subject is largely based on the *Bulletin* of the Comparative Law Bureau of the American Bar Association, July 1, 1912, and covers the period for the latter half of 1911 and the first half of 1912.

under the auspices of the Carnegie Endowment for International Peace, decided to consider, among other things, the origin, basis and methods of the protectional policy; international loans; foreign investments; and the interdependence of the financial centers of the world.

The International Law Association at its meeting in Paris, May 21 to June 1, 1912, considered various questions relating to private international law. George Whitelock, secretary of the American Bar Association, read a paper on the "Development of the Injunction in the United States." Other topics treated were "Foreign Judgments," "Unification of the Rules of Private International Law," and "Jurisdiction in Divorce." (See also XIII, "International Congress of Chambers of Commerce.")

The Internationale Vereinigung für vergleichende Rechtswissenschaft und Volkswirtschaftslehre zu Berlin, at its meeting held in Heidelberg in September, 1911, decided to appoint an international commission to attempt to harmonize the differences between the principles of Anglo-Saxon and European private international law.

Maritime Law.—Great Britain and Belgium have adopted acts carrying into effect the recommendations of the Brussels Conference of 1910 re-

lating to collisions and salvage. The following provisions contained in the English act are of interest in view of the disaster to the *Titanic*:

The master or person in charge of a vessel shall, so far as he can do so without serious danger to his own vessel, her crew and passengers (if any), render assistance to every person, even if such person be a subject of a foreign state at war with His Majesty, who is found at sea in danger of being lost, and if he fails to do so he shall be guilty of a misdemeanor.

The Convention of 1906, regulating wireless telegraphy was ratified by the United States Senate in April, 1912. (See also I, *The "Titanic" Disaster*.)

Aviation.—The Internationale Vereinigung für vergleichende Rechtswissenschaft und Volkswirtschaftslehre, at its meeting in Heidelberg in September, 1911, declared for the principle that the air is free to all airships, except so far as the safety and defense of the subjacent territory may make necessary. A similar principle was agreed on at a conference between the leading European powers held in Paris in November, 1911. An English act gives a secretary of state the right to prohibit aerial navigation over such areas as may be specified in the order.

COURTS

ORGANIZATION

The Judicial Code.—The Act of March 3, 1911, codifying all laws of the United States relating to the judiciary went into effect Jan. 1, 1912. On the whole it makes very few substantial changes in the law relating to the federal courts, as the new code is only a rearrangement of existing law, and, in most cases, the language of the previous law has been used. The most important change is in the abolition of the circuit courts, with the transfer of all their jurisdiction to the district courts. While there was no good reason for the existence of two courts of equal rank within the same district, yet it is regarded as unfortunate by many that the district courts were not abolished so as

to leave the circuit judges as judges of the lower courts, or that these judges were not given the same power in the new district courts which they had in the old circuit courts. The only other substantial change is the introduction in the federal practice of the affidavit of prejudice, whereby a litigant may by filing an affidavit that the regular judge of the district court is prejudiced against him prevent such judge from sitting in the trial of the case. Various questions as to the exact scope of this affidavit have already been raised in the courts, but it is too soon to have any idea how this innovation will work.

Supreme Court.—The work of the Supreme Court of the United States has been increasing very rapidly dur-

ing recent years. Beginning about ten years ago the court began to catch up with the docket and reduced the number of cases remaining undisposed of at the close of each year. This continued for only a short time, however, and during the last few years there has been an increasingly larger number of cases undisposed of at the end of every term, notwithstanding the fact that the Court has been able to hear and determine an increasingly larger number of cases at each term. At the adjournment of the Supreme Court in the summer of 1910 there were undisposed of 650 cases, of which 640 were on the appellate docket and 10 on the original docket. At the next term 532 new cases were docketed, of which 530 were on the appellate docket, and two on the original docket. During the term the court was able to dispose of 502 cases, so that when it adjourned in the summer of 1912, there were 680 cases undisposed of, or an increase of 30 over the situation at the same time the year before. Of the cases so disposed of, 499 were appeals from the lower courts; of these 155 were affirmed, and 83 reversed; of the remainder 85 were dismissed, 44 were settled by the parties, in seven questions certified by the lower courts were answered and 125 cases were denials of petitions for writs of certiorari.

Commerce Court.—There was considerable criticism of the newly established Court of Commerce because of an alleged tendency in its decisions to favor the carriers. Apparently as a result of this criticism efforts were made to abolish this court by withholding from it the necessary appropriation for expenses, but this was prevented by a veto by the President of the appropriation bills containing these provisions. Finally, however, the general Legislative, Executive, and Judicial Appropriation Act continued the appropriations for the Commerce Court only until March 4, 1913. Unless some action is taken by Congress prior to that time the Commerce Court will necessarily cease its work. This in no way affects the tenure of the judges of this Court, as they rank as circuit judges and

were provisionally assigned to different circuits.

Attorney-General Wickersham in his annual report gives statistics as to the cases pending in the Commerce Court, the applications to that Court for injunctions, and the periods of litigation in that as compared to the Circuit Courts. His conclusion is that as compared with the District Courts in actions affecting the Interstate Commerce Commission, the Commerce Court is much more expeditious, has upheld the Commission in a larger percentage of cases, and has granted temporary injunctions with less frequency. He believes that to require the division of the cases involving the orders of the Interstate Commerce Commission in various parts of the country, will lead to greater expense and greater delay.

Federal Judicial Appointments.—The vacancy in the Supreme Court of the United States caused by the death of Justice Harlan was filled by the nomination on Feb. 19 of Mahlon Pitney, Chancellor of New Jersey. This appointment developed some opposition, particularly from the labor unions, on account of some statements in Chancellor Pitney's opinions, but he was finally confirmed on March 13 and qualified and took his seat March 18.

The United States circuit judges appointed during the year included Frederic Dodge, district judge of the District of Massachusetts, appointed in the First Circuit to succeed William Schofield, and John B. McPherson, district judge in the Middle District of Pennsylvania, appointed in the Third Circuit to succeed William M. Laning. (See also V, *The Federal Judiciary*.)

Recall of Judges.—The question of the recall of judges continued to excite considerable discussion but on the whole did not receive any strong support. It was noticeable that none of the three leading candidates for President favored this method of removing the occupants of the Bench. Mr. Roosevelt, however, advocated the "recall of judicial decisions," which is discussed at length on other pages of the YEAR BOOK (see I, *American History*, and II, *Popular Government and Current Politics*.)

Impeachment of Judge Archbald.—The House of Representatives voted 13 articles of impeachment against Robert W. Archbald, one of the United States circuit judges assigned to the Commerce Court, and presented them to the Senate on July 15. Prior to his appointment to this position Judge Archbald was United States district judge for the Middle District of Pennsylvania, to which position he was appointed by President McKinley in 1901. Formal proceedings were begun in the Senate on Dec. 3 (see I, *American History*).

PROCEDURE

Federal Equity Practice.—On Nov. 4 the Supreme Court of the United States promulgated a general revision of the equity rules, to take effect Feb. 1, 1913. This is the first general revision of these rules since 1842, although the former rules have been considerably amended since they were originally issued. Two important changes are made by the new rules. A case is at issue much more quickly, as several of the formal steps in the old equity procedure have been cut out, including demurrers and pleas. Evidence is hereafter to be taken before the judge in open court, instead of before an examiner, as under the present practice. The granting of preliminary restraining orders is to a certain extent restricted by requiring that the facts showing the necessity for such an order clearly appear, and by providing that such an order obtained without notice must be returnable in not more than ten days. The new rules not only afford ample opportunity for the speedy trial of cases, but seem to require such a trial as far as any rules can do so.

In the equity suit brought by the Government against the United Shoe Machinery Co., after issue was joined and the Government was about to take the testimony before an examiner under the old equity rules, the defendants demanded that the public be excluded from the hearing. On the matter being presented to the court it was held that no person other than the parties or their counsel was entitled to be present at the taking of testimony. Attorney-Gen-

eral Wickersham in his annual report urges that when the Government is a party that the public has a legitimate interest in the proceedings, and is entitled to know what evidence is being given. This is particularly true in suits under the Anti-Trust Act, as the newspaper reports of the evidence often lead to the discovery of additional evidence upon the point. He points out that the new equity rules where they allow the testimony to be taken before an examiner contain no provision on the question of publicity. He also states that suits in equity under the anti-trust law involve the taking of so much testimony, and the examination of such voluminous accounts, that in many cases it would be extremely difficult to take the testimony before the court, especially in view of the provisions of the law which requires such cases to be heard by at least three judges. He therefore suggests an amendment to the Expedition Act so that where the Attorney-General files the certificate provided therein and also certifies the case as one in which testimony cannot properly be taken in open court, that a master shall be appointed to take the testimony in the presence of the counsel for the parties and such other persons as may choose to attend.

Federal Practice at Law.—The practice in the federal courts in actions at law has for many years been required under an Act of Congress to conform in its general aspects to the practice of the state where the court is held. This plan has been open to two very important objections. There has been no real conformity to the state practice because the act has not received an exact adherence, and the federal courts have in many instances refused to follow special provisions of the state laws which were deemed inconsistent with the federal system. There have also been a number of variations caused by the existence of Acts of Congress relating to practice generally, which consequently overruled any special provisions of the state statutes. At the 1912 meeting of the American Bar Association a resolution was unanimously adopted advocating the repeal of the so-called Conformity

Act and the establishment of a system of practice in actions at law in the federal courts under rules laid down by the Supreme Court, just as the practice in suits in equity is now governed.

State Legislation.—New Jersey has adopted an act entirely revising the procedure in actions at law. Probably the most important feature of this is that it leaves the details of the practice in pleading to be governed by rules of court, although the Act itself provides such rules, which, however, are subject to modification at any time by the courts. It also abolishes bills of exceptions and writs of error and substitutes appeals by which the whole record is brought to the appellate court. That court is also allowed to take additional testimony on points which are subject to proof by record evidence.

New York and New Jersey have adopted substantially the recommendation of the American Bar Association to the effect that there shall be no reversal unless the substantial rights of the party have been affected.

The legislation of the year shows a considerable tendency to modify the rules of evidence, particularly in the direction of removing disabilities formerly imposed on persons by common law or statutes, thus attempting to widen the evidence which may properly be placed before a jury.

In Virginia an act was passed which forbids the direction of a verdict. As, however, an act of the same session regulates the demurrer to the evidence and as the right to set aside a verdict and grant a new trial will still exist, this provision probably does not take away from the judge his control over the verdict of a jury.

An amendment to the Ohio constitution provides for a verdict by three-fourths of the jury in civil cases.

Delay in Litigation.—The agitation regarding the law's delay is probably responsible for an act passed by the last legislature in New York, which contains various provisions tending to expedite appeals in criminal cases where the defendant has been sentenced to death. In commenting on this in his annual address before the

American Bar Association, President Gregory said:

Such efforts to throw a sop to Cerberus in the way of appeasing the insane clamor for speed in capital proceedings suggests the commentary of Edmund Burke that in matters of property where speed was vital there was, under the law of England, delay without limit, but that in matters of life, where if a mistake was made it was impossible to correct it, under the same law no delay whatever was admitted.

England has been so long held up as a model for expedition in the trial of cases that the following quotation from the *Solicitor's Journal* for Aug. 3, 1912, will probably come as a surprise to many:

It must not be supposed by those who have, since the beginning of the year, read complaints of the arrears in the King's Bench and the delay and inconvenience suffered by suitors, that such complaints are peculiar to this country.

CONSTITUTIONAL LAW

Attitude of the Courts on Questions of Constitutionality.—Probably no topic has caused more general discussion during the past year than that of the right of the courts to declare unconstitutional laws passed by Congress or by state legislatures. The principles on which the courts proceed in such cases are well settled. It has been declared in numerous cases during 1912 that a law can be set aside as contrary to the provisions of the constitution only when its unconstitutionality is entirely clear, or, as it is sometimes stated, where its unconstitutionality is apparent beyond a reasonable doubt.

Speaking of the attitude which the court should adopt regarding general provisions in a constitution, Chief Justice Winslow of the Supreme Court of Wisconsin stated:

When an eighteenth-century constitution forms the charter of liberty of a twentieth-century government, must its general provisions be construed and interpreted by an eighteenth-century mind in the light of eighteenth-century conditions and ideals? Clearly not. This were to command the race to halt in its progress, to stretch the state upon a

veritable bed of Procrustes. (*Borgnis v. Falk Co.*, 133 N. W. 209, Nov. 14, 1911.)

A very similar statement regarding this attitude is found in the opinion of Justice Evans of the Supreme Court of Iowa, where he says:

The Constitution was intended to announce certain basic principles to serve as the perpetual foundation of the state. It was not intended to be a limitation upon its healthful development, nor to be an obstruction to its progress. New days bring new problems. Legislation must meet these problems as they come; otherwise our plan of government must prove inadequate. Manifestly, we ought not to be swift to adopt such a technical or strained construction of the Constitution as would unduly impair the efficiency of the legislature to meet its unavoidable responsibilities. (*State v. Fairmont Creamery Co.*, 133 N. W. 895, Dec. 18, 1911.)

The Federal Constitution.—An examination of the reports shows that the Supreme Court of the United States, in the opinions handed down during the October, 1911, term, comprising the period from the meeting of the court in October, 1911, to its adjournment in the Spring of 1912, considered two cases in which laws of the United States were attacked as unconstitutional, and in both cases these laws were sustained. The laws thus sustained were the Employers'-Liability Act as amended in 1910 (*Second Employers'-Liability Cases*, 223 U. S. 1, Jan. 15, 1912) and the Safety-Apppliance Act as amended in 1903 (*Southern Ry. Co. v. United States*, 222 U. S. 20, Oct. 30, 1911). During the same term of that court there were 38 cases in which state laws, municipal ordinances, or orders of state commissions were claimed to be in conflict with some provision of the constitution of the United States; in 31 of these cases the law, ordinance, or order was sustained, and in seven it was declared unconstitutional. The 31 cases comprise a wide variety of laws, many of which were claimed to be contrary to the Fourteenth Amendment. Of the seven cases above mentioned, two were orders of commissions, one being where a track connection between two rail-

roads had been ordered and there appeared to be no necessity for it (*Washington v. Fairchild*, 224 U. S. 510, April 29, 1912), and the other where an order of a state commission fixing rates was held to apply to interstate commerce (*Railroad Commission, Ohio, v. Worthington*, 32 Sup. Ct. 653, May 27, 1912). Three other cases were where the state law attempted to apply to interstate commerce, one by regulating the hours of service of railway employees (*Northern Pacific Ry. Co. v. Washington*, 222 U. S. 370, Jan. 9, 1912); another by attempting to impose a penalty for a refusal to receive goods for interstate shipment (*Southern Ry. Co. v. Reid*, 222 U. S. 424, Jan. 9, 1912); and a third, by imposing a tax upon revenues derived from interstate commerce (*Meyer v. Wells, Fargo & Co.*, 223 U. S. 298, Feb. 19, 1912). In another case a repeal of a telephone franchise by a city was held to impair the obligation of the contract between the city and the company (*Louisville v. Cumberland Telephone Co.*, 224 U. S. 649, May 13, 1912). The only case where a state law was held directly contrary to the Fourteenth Amendment was one which, as applied by the state court, allowed the recovery of double damages from a railroad company as a penalty for failure to pay a claim within 30 days after demand, even though the amount sued for was less than the amount demanded (*St. Louis, etc., Ry. Co. v. Wynne*, 224 U. S. 354, April 15, 1912).

State Constitutions.—During the period from the Fall of 1911 to the close of the sessions of the courts in the Summer of 1912, a very large number of cases involving the constitutionality of state laws came before the highest courts of the states. In many cases the point involved was the failure of the law to comply with some special provision of the state constitution, such as the method by which a law must be passed, the way in which the subject must be expressed in its title, or some provision relating to the machinery of the state government. An examination of the cases in which state laws have been held unconstitutional because of their failure to comply with some of the

more general requirements of constitutions, such as due process of law or the right to enter into contracts, has shown nine laws which have failed because of such a provision. These will be discussed more in detail later under their appropriate headings.

Restrictions on Power of Courts over Laws.—The new constitution of Ohio, as adopted during the past year, provides that no law of the state shall be declared unconstitutional unless at least six of the seven judges of the Supreme Court concur in the decision, or unless the Supreme Court affirms a decision of the Appellate Court declaring the law unconstitutional.

A suggestion was made by ex-President Roosevelt in his speech before the Ohio Constitutional Convention that a referendum vote should be taken upon decisions of courts holding laws unconstitutional. It was not intended to apply this plan to all decisions and the application of it has not been definitely formulated nor included in any proposed constitutional amendments. (See also I, *American History*, and II, *Popular Government and Current Politics*.)

In view of the objections which are being made to decisions of American courts declaring laws unconstitutional, it is interesting to note that two French writers, Raoul de La Grasserie (*De la Fonction et des juridictions de Cassation en Legislation Comparée*) and Jules Coumoul (*Traité de Pouvoir Judiciaire*), advocate giving the Court of Cassation the same power over legislation.

Interstate Commerce.—One of the provisions of the federal constitution most frequently resorted to for an extension of the legislative power of Congress is the interstate commerce clause. The Supreme Court of the United States has sustained the amendment of 1903 to the Safety-Appliance Act, whereby the provisions of that act were applied to all vehicles used on any railroad engaged in interstate commerce instead of only to vehicles which were actually engaged in moving interstate traffic (*Southern Ry. Co. v. United States*, 222 U. S. 20, Oct. 30, 1911). The decision holding unconstitutional

a state law imposing a penalty for failure to receive goods for interstate shipment has already been noted (*Southern Ry. Co. v. Reid, supra*). The Act of Congress regulating the rules of liability applied to accidents to railway employees engaged in interstate commerce was sustained under the commerce clause of the constitution (*Second Employers' Liability Cases*, 223 U. S. 1, Jan. 15, 1912). (See also XXII, *Trade, Transportation, and Communication*.)

The justices of the Supreme Court of Massachusetts advised the legislature that a bill requiring all convict-made goods imported into the state to be so labeled would be unconstitutional as an interference with interstate commerce (Opinion of the Justices, 98 N. E. 334, May 3, 1912).

Monopolies.—An Act of Oklahoma which forbade combinations in restraint of trade but allowed combinations in furtherance of trade disputes between employers and employees was sustained by the Court of Criminal Appeals of that state (*State v. Coyle*, 122 Pac. 243, March 23, 1912). An Act of Iowa prohibiting the sale of commodities at different prices in different localities in the state with the intent to affect the business of competitors was also sustained (*State v. Fairmont Creamery Co.*, 133 N. W. 895, Dec. 18, 1911).

Labor Laws.—The workingmen's compensation acts came before the courts of several of the states. The so-called elective laws were sustained in Massachusetts (Opinion of the Justices, 209 Mass. 607, 96 N. E. 308, July 24, 1911), Ohio (*State v. Creamer*, 97 N. E. 602, Feb. 6, 1912), and Wisconsin (*Borgnis v. Falk Co.*, 133 N. W. 209, Nov. 14, 1911), and a compulsory law was upheld in Washington (*State v. Clausen*, 117 Pac. 1101, Sept. 27, 1911). An elective law was declared unconstitutional in Montana only because it allowed a common-law action against the employer who had already contributed to the fund from which the employees were to be paid (*Cunningham v. Northwestern Imp. Co.*, 119 Pac. 554, Nov. 21, 1911).

An Illinois Act limiting employment of women to ten hours a day in certain establishments, including

hotels, was sustained (*People v. Elerding*, 98 N. E. 982, June 21, 1912), and a similar act in California limiting the hours to eight hours a day was also sustained (*Ex parte Miller*, 124 Pac. 427, May 27, 1912).

In Minnesota an officer of a railway company was prosecuted under a statute of that state for requiring an agreement from an employee as a condition of employment that such employee would agree not to remain a member of a labor union. The defendant was released on habeas corpus as the court held the statute unconstitutional in so far as it punished anyone who required such an agreement as a condition of employment. This decision is based upon the decision of the Supreme Court of the United States in *Adair v. United States* (208 U. S. 161), where a similar provision in an Act of Congress was held in conflict with the Fifth Amendment to the federal Constitution. The Minnesota court states that while that amendment does not apply to the states, yet it is so similar to the Fourteenth Amendment that a decision under it as to an Act of Congress must be equally binding as to an act of a legislature. The Minnesota court points out that the *Adair* case did not pass upon the question of whether the portion of the Act of Congress forbidding coercion of an employee to make such an agreement is constitutional, and consequently does not determine that question in regard to the Minnesota Act, as the defendant in the Minnesota case was not charged with coercing the employee. The court indicates, however, that a different conclusion would probably be reached in regard to coercion, and that the statute would be sustained to this extent. (*State v. Daniels*, 136 N. W. 584, June 7, 1912.)

The justices of the Supreme Court of Massachusetts advised that a bill providing that no action could be maintained against a trade union or an association of employers for a tortious act alleged to have been committed by such a union or by such employers would be unconstitutional (Opinion of the Justices, 98 N. E. 337, May 8, 1912).

The Supreme Court of the United States sustained a Massachusetts statute requiring assignment of wages to secure loans of less than \$200 to be accepted by the employer and recorded and to have the consent of the employee's wife (*Mutual Loan Co. v. Martell*, 222 U. S. 225, Dec. 11, 1911). An Act of Missouri requiring payment of wages at least twice a month, was sustained as a reasonable exercise of the police power. Three out of the seven justices said that the act goes to the very verge of the constitutional power and implied that they would dissent but for a previous decision of the Supreme Court of that state (*State v. Missouri Pac. Ry. Co.*, 147 S. W. 118, May 7, 1912). It may be noted that similar laws have been held unconstitutional in Pennsylvania, California, and Indiana. (See also XVII, *Labor Legislation*.)

Division of Governmental Powers.

—The ordinary provision of state constitutions dividing the government into the executive, legislative, and judicial departments has been invoked against laws providing for the commission form of government for cities. It has been held, however, in Nebraska (*State v. Ure*, 135 N. W. 224, March 12, 1912), and in Minnesota (*State v. Mankato*, 136 N. W. 264, May 17, 1912), that this provision does not apply to cities.

An Act of Connecticut giving directions for the administration of land held by trustees under a will for a public library has been held unconstitutional as an encroachment of the legislature upon the power of the courts to administer the trust (*Bridgeport Library v. Burrough Home*, 82 Atl. 582, March 7, 1912).

Freedom of Contract.—The only state law which has been held unconstitutional as interfering with the right of contract is one of Illinois giving a subcontractor's lien, even though the original contractor had agreed with the owner to waive all right to a lien (*Kelly v. Johnson*, 25 Ill. 135, 95 N. E. 1068, June 20, 1911).

Due Process of Law.—The decision of the Supreme Court of the United States declaring unconstitutional a law of Arkansas as not affording due

process of law has already been noted (St. Louis, etc., Ry. Co., *v.* Wynne, *supra*). In Wyoming a law requiring any person constructing a ditch, canal, or reservoir to take a surety bond from the contractor and making the owner personally liable for the debts in case of his failure to take the bonds was held unconstitutional, both because it imposed a liability where no benefit had been received and also because it required the bond to be taken from a surety company (Geo. Bolln Co. *v.* North Platte Co., 121 Pac. 22, Feb. 13, 1912). A drainage law of Utah was held unconstitutional as allowing the petitioners to determine what land should be included in the district without giving other land owners so included an opportunity to be heard on this question (Argyle *v.* Johnson, 118 Pac. 487, Sept. 26, 1911).

The water-power law of Wisconsin was declared unconstitutional as lacking in due process of law and as interfering with the use of property (Water Power Cases, 134 N. W. 330, Jan. 30, 1912). As applied to undeveloped water powers this act allowed persons not riparian owners to apply to the Railroad Commission of the state for a franchise to build a dam and develop a water power and to secure upon such application a limited permit or franchise subject to the payment of a franchise fee and various other restrictions. In the case of developed water powers, it repealed all permits or franchises previously granted for the maintenance of dams, but allowed the owners of such dams to apply for new franchises within a certain time and to secure such franchises subject to the same terms as new franchises. The state and municipalities were given power to acquire water power by special condemnation proceedings before the Railroad Commission. In fixing values of any water power acquired under the act no allowance was to be made for any franchise value or increase in land value subsequent to the franchise. The court held that the right of the state was restricted to regulation of navigation on the rivers of the state and that the ownership of the water powers was vested in the riparians. It con-

sequently declared that the act was unconstitutional as preventing riparian owners from using their property in a way which was recognized by the law as not an interference with the public right of navigation and as failing to provide for proper compensation when the property of the riparian owners was acquired.

Initiative and Referendum.—After the Supreme Court of Oregon had sustained the validity of laws enacted under the provisions of the initiative and referendum in the constitution of that state, the case was taken to the Supreme Court of the United States by writ of error under the claim that these provisions of the Oregon constitution were in violation of Sec. 4 of Art. 4 of the constitution of the United States, providing that the United States shall guarantee to every state a republican form of government. That court, in an opinion by Chief Justice White, refused to consider whether provisions like the initiative and referendum operated to change the form of government to one other than a republican one, on the ground that this is exclusively a political question for the determination of Congress. (Pacific Telephone Co. *v.* Oregon, 223 U. S. 118, Feb. 19, 1912.)

NON-CONSTITUTIONAL LAW

Trusts.—The Supreme Court of the United States applied the Sherman Act in the case of a Terminal Railroad Association in which various railroads entering the city of St. Louis held stock. This was required to be reorganized in such a way as to afford the companies desiring to use the terminal facilities an equal share in the control and management of the association (United States *v.* Terminal Railroad Association, 224 U. S. 383, April 22, 1912).

In the so-called Bathub Trust case, after an entry of a decree in favor of the Government by the Circuit Court of the United States for the District of Maryland, an appeal was taken by the defendant to the Supreme Court, where the decree was affirmed. This compels the dissolution of a combination consisting of 16 corporations and 64 individuals,

who were manufacturers of or jobbers in enameled iron ware. It appeared that the agreement under which the combination operated bound its members not to sell to jobbers outside of the combination, and to sell only at a price fixed by a committee of six. The jobbers who were not in the combination could not obtain enameled ware from any manufacturer who was a party to the agreement, and the jobbers were required to agree not to re-sell to jobbers except at the fixed prices. One of the important questions considered by the court was the effect of the monopoly conferred by the patents held by the manufacturers. It was decided that the agreements were clearly beyond what was necessary to protect the use of the patent, and on this point the court said:

Rights conferred by patents are, indeed, very definite and extensive, but they do not give, any more than other rights, an universal license against positive prohibitions. The Sherman law is a limitation of rights, rights which may be pushed to evil consequences and therefore restrained. (*Standard Sanitary Mfg. Co. v. United States*, Nov. 16, 1912).

In an action against the International Harvester Co. of America the Supreme Court of Missouri imposed a fine of \$50,000 which was afterward reduced on rehearing to \$25,000. This was on the ground that the company, which was a subsidiary of the general company, was acting as a sales agent for the trust in that state, where the trust was not licensed to do business (*State v. International Harvester Co.*, 141 S. W. 672, Nov. 14, 1911).

Following the decision in the American Tobacco Co. case (*AMERICAN YEAR BOOK*, 1911, p. 168) the United States Court for the Southern District of New York entered a final decree in the suit against the American Tobacco Co. This requires the American Tobacco Co. to divide into four smaller companies and also requires a division of the subsidiary companies so that the business previously controlled by the American Tobacco Co. will be in the hands of 14 corporations. The individual defendants are restrained from increas-

ing their interest in the various corporations and the corporations are forbidden to have common officers or directors (*United States v. American Tobacco Co.*, 191 Fed. 371, Nov. 15, 1911). An effort was made by parties who were opposed to the form of this decree to secure its vacation by application to the Supreme Court, but this was denied on the ground that only those who were parties to the record had the right to make this objection (*Ex parte Leaf Tobacco Board of Trade*, 222 U. S. 578, Dec. 11, 1911).

Following an interlocutory decree in a suit under the Sherman Act against the E. I. du Pont de Nemours Powder Co., a plan of dissolution was agreed to between the Government and the defendants, and this plan was approved by the Circuit Judges in the District Court of the United States for the District of Delaware. This provided for a dissolution of seven of the defendant corporations and the distribution of the property among the stockholders and the division of the remainder of the property of the company between it and two new corporations.

In suits brought under the same law against the Pacific Coast Plumbing Supply Association; the Aluminum Company of America; the Central West Publishing Co.; Western Newspaper Union, and American Press Association, the defendants voluntarily submitted to final decrees entered by the court commanding the dissolution of the combinations and enjoining various practices set up in the petition filed by the Government.

Following the termination of the trial of the Chicago packers, steps were taken for the voluntary dissolution of the National Packing Co. The details of this dissolution were submitted to the federal Department of Justice, and it is believed by it that the new arrangement will accomplish a restoration of competitive conditions and obviate the necessity of any action under the Sherman Act.

The most important of the civil suits under the Sherman Act which were proceeding during the year were those against the United States Steel Corporation; the Hamburg-

American Packet Co., and other trans-Atlantic lines alleged to be controlling steamer traffic; and the Great Lakes Towing Co., and others alleged to be monopolizing the towing facilities on the Great Lakes. The leading new suits brought under the Act were against the International Harvester Co.; the National Cash Register Co.; the United Shoe Machinery Co.; the Keystone Watch Co., and various others.

The Government was not particularly successful in prosecutions to enforce criminal liability under the Sherman Act. The most prominent of these prosecutions was that of the packers at Chicago, which resulted in a verdict of acquittal of all the defendants, on March 7, 1912. The trial at Detroit of the defendants who were concerned in the Bathtub Trust resulted in a disagreement of the jury, March 14, 1912. A demurrer to an indictment against the National Cash Register Co. and its directors was overruled, and the trial of the defendants began on Nov. 18, 1912. In the prosecution of the United Shoe Machinery Co. and its officers, a demurrer was sustained by Judge Putnam to one indictment and to one count in a second indictment, from which decision the Government has appealed to the Supreme Court.

A report from the Department of Justice showing the various prosecutions and suits brought under the Sherman law indicates that in all 128 cases have been commenced under that Act. These are divided by administrations' as follows: Harrison, 7; Cleveland, 8; McKinley, 3; Roosevelt, 44; Taft, 66.

Interstate Commerce.—The Supreme Court of the United States, reversing the Court of Commerce, held that the Interstate Commerce Commission has the power to require a uniform system of accounting by carriers on the Great Lakes and reports thereunder, and that such system and reports need not be limited to the transportation business of the companies but may cover all business, including the maintenance of amusement parks, etc. (*Interstate Commerce Commission v. Goodrich Transit Co.*, 224 U. S. 194, April 1, 1912).

The liability of a railroad company under the so-called Carmack amendment has been held not only to apply to actions in federal courts but also to be enforceable in any state court (Galveston, etc., *Ry. Co. v. Wallace*, 223 U. S. 481, Feb. 19, 1912).

A railroad company engaged in interstate commerce cannot refuse to accept for shipment intoxicating liquors which are consigned to prohibition territory. The Supreme Court of the United States holds as it has previously done that under the federal law the traffic in intoxicating liquors is entirely legal and that therefore the duty of a common carrier extends to this as well as to any other legitimate object of commerce (*Louisville & N. R. Co. v. F. W. Cook Co.*, 223 U. S. 70, Jan. 22, 1912). (See also XVI, *The Liquor Traffic and Problem*, and XXII, *Trade, Transportation, and Communication*.)

Regulation of Public Service Companies.—There were various cases decided during the year where decisions of commissions or city councils were set aside by the courts. The Supreme Court of the United States, reversing the Supreme Court of Washington, held void an order of the Railroad Commission of that state requiring trackage connection between two railroad companies, where there appeared to be no proof of inadequate service or of a public demand for such connection (*Washington v. Fairchild*, 224 U. S. 510, April 29, 1912).

A similar order of the Railroad Commission of Mississippi was held void as unreasonable by the Supreme Court of that state (*Mississippi Railroad Commission v. Yazoo & M. V. R. Co.*, 56 So., 668, Dec. 18, 1911).

The Supreme Court of the United States, affirming the decree of the Circuit Court of Appeals, enjoined the enforcement of an order of the Ohio Railroad Commission fixing rates on coal carried *via* the Great Lakes as a regulation of interstate commerce (*Railroad Commission v. Worthington*, 32 Sup. Ct. 653, May 27, 1912).

An order of the Corporation Commission of Oklahoma fixing telegraph rates was held void by the Supreme Court of that state as failing to af-

ford the company an adequate return (*Western Union Tel. Co. v. State*, 121 Pac. 1069, Jan. 9, 1912).

The federal District Court held void as failing to afford a proper return on the investment, an ordinance of the local council of Belleville, Mo., requiring a five-cent street-railway fare in the village (*East St. Louis Ry. Co. v. Belleville*, 193 Fed. 95, Jan. 31, 1912). (See also XXII, *Public Services*.)

Employers' Liability.—The Supreme Court has considered various questions arising under the federal Employers' Liability Act as applied to railroads in the territories or engaged in interstate commerce. The rule of liability as laid down in that Act has been held to apply to actions in state courts and to supersede entirely all of the previous state laws on the subject, provided the person injured comes within the terms of the federal Act (*Second Employers' Liability Cases*, 223 U. S. 1, Jan. 31, 1912). As the federal law practically covers nearly all railroad employees it will be seen that very little place is left for the operation of state laws governing this subject. (See also XVII, *Labor Legislation*.)

Right of Administration.—A decision of considerable importance, in view of the increase in employers' liability legislation and because in many cases the employee is an alien, was rendered regarding the right of a foreign consul to administer the estate of a foreigner dying within his jurisdiction. It was held that the treaties do not give this right as against a state law giving the right of administration to the public administrator in the absence of relatives or other persons entitled to the administration (*Rocca v. Thompson*, 223 U. S. 317, Feb. 19, 1912).

Patents.—Probably no decision of the Supreme Court of the United States during the past year has attracted more general attention than the one upholding the right of the holder of a patent to restrict the articles which can be used with the patented machine. The specific question involved was on a certificate from the United States Circuit Court of Appeals for the Second Circuit in a case where a mimeograph was sold

under a restriction that it should be used only with ink supplied by the manufacturer, and the defendant, with knowledge of the restriction, sold the user other ink, the question being whether such sale constituted contributory infringement of the patent. The majority of the Supreme Court in an opinion by Justice Lurton, with whom Justices McKenna, Holmes, and Van Devanter concurred, held that the patent law gives the patentee the right to withhold the patented article from sale entirely and that consequently it also gives him the right to sell it subject to such restrictions as he desires to impose, so that a violation of such restrictions would be a violation of the patent. Chief Justice White, with Justices Hughes and Lamar concurring (Justice Day being absent), dissented, claiming that the patent law gave no right to enforce restrictions regarding the use of articles not covered by the patent, and suggesting the propriety of an amendment of the law by Congress to obviate the construction placed upon it by the majority of the Court. After Justice Day returned to the bench and Justice Pitney had taken his seat, a motion for rehearing was made and the United States filed a petition for leave to intervene and participate in the rehearing, but both applications were denied (*Henry v. A. B. Dick Co.*, 224 U. S. 1, March 11, 1912). It should be noted that a contrary decision in this case would not have affected the right of the patentee to impose such restrictions and to maintain an action for damages for a violation of them but would have only denied him the right to maintain his action under the patent laws. (See also XXI, *Patents and Inventions*.)

Copyright.—A novel application of the copyright law appears in a decision of the Supreme Court of the United States to the effect that moving pictures based upon a story contained in a copyrighted work amount to a dramatization of the work and consequently to an infringement of the general copyright. This decision was rendered in a case involving moving pictures to illustrate the story of Ben Hur (*Kalem Co. v. Harper Bros.*, 222 U. S., 55, Nov. 13, 1911).

Labor Litigation.—A somewhat new use of the labor injunction is found in an action brought in Massachusetts by members of a labor union asking an injunction restraining the officers of the union from calling a strike. The court held that the remedy was one which might be applied in the proper case but that the union was justified in the calling of a strike and hence could not be interfered

with (*Minasian v. Osborne*, 96 N. E. 1036, Nov. 29, 1911).

In Kentucky a suit was brought by an employer against a union with whom he had made a contract to furnish labor, but no recovery was allowed as it appeared that the contract had expired before the members of the union quit work (*Saulsberry v. Coopers' Union*, 143 S. W. 1018, Feb. 27, 1912).

THE LEGAL PROFESSION

Department of Justice.—The magnitude of the work which is now being done by the federal Department of Justice is seen by the fact that, according to the report of the Attorney-General, during the past year it required the services of 48 attorneys at Washington, and 326 attorneys outside of Washington. Three thousand two hundred and forty-two civil cases to which the United States was a party, and 16,158 criminal prosecutions were disposed of in the Circuit and District Courts of the United States, and 1,212 cases in the Court of Claims. The Government was a party to or had a substantial interest in 144 cases on the appellate docket disposed of by the Supreme Court of the United States at the October term, 1911. The United States was appellant in 41 of these cases, and appellee in 97; it was substantially interested in five and the other was a certification of questions. Of the 41 cases in which the United States was appellant, 25 were decided in its favor, and nine against it; in four cases there was a partial modification, while one case was dismissed by the Government, one by the Court for want of jurisdiction, and one was affirmed by stipulation. Of the 97 cases in which the Government was appellee, 36 were determined in its favor and eight against it; two were modified; four were dismissed by the opposite party; eight were dismissed by the Court; one was abated by death; in one error was confessed, and the remaining 37 were denials or petitions for writs of certiorari. In the five cases in which the Government had a substantial interest and

the one case in which a question was certified, the decision was in favor of the contention of the United States.

American Bar Association.—The 35th annual meeting of the American Bar Association was held at Milwaukee, Wis., on Aug. 27-29, inclusive. Frank B. Kellogg, of St. Paul, was elected president for the ensuing year.

Legal Education.—The Association of American Law Schools held its annual meeting at Milwaukee, Wis., in connection with the American Bar Association. This is an association composed of those law schools in the country which are willing and able to maintain the standard set by it as a minimum for proper instruction in law. Several new schools were admitted at the Milwaukee meeting. Henry M. Bates, dean of the Law School of the University of Michigan, was elected president for the following year.

Admission to the Bar.—The section on legal education of the American Bar Association has been considering for some time uniform rules for the admission to the bar. A voluminous report was made by a special committee of this section at the Boston meeting in 1911. The report indicated that the trend of court rules and of law-school curricula is toward lengthening the period of study, increasing the practical work required of the student, and making the examinations more searching and thorough. At the Milwaukee meeting of the association a resolution was adopted advocating that both instruction in a law school and work in a law office be required as a prerequisite to the taking of a bar examination.

CRIMINAL LAW

WILLIAM E. MIKELL

Most of our state legislatures meet only biennially, and by far the greater number hold their sessions in the uneven numbered years. There has therefore been, comparatively speaking, little statutory criminal law enacted during the year 1912. Several states, however, have enacted such legislation, which may be divided into seven classes: laws for the protection of health; laws for the protection of business; laws for the protection of minors and females; laws for the protection of the ballot; laws for the prevention and detection of crime; laws relating to punishment for crime; miscellaneous.

Laws for the protection of health have been enacted in New Jersey, Virginia, South Carolina, Maryland, and in Rhode Island and Kentucky, Virginia has declared hypnotizing, except by a physician, a crime. Rhode Island and Kentucky have abolished the public drinking cup. In South Carolina and Maryland it has been made a misdemeanor to sell narcotic drugs without a prescription, and in Rhode Island thus to sell poisons.

Laws for the Protection of Business.—Many new laws have been passed, or old laws amended, looking to the protection of men in their business dealings. Maryland has made the charging of more than certain specified rates of interest by so-called "loan sharks" a misdemeanor; New York and New Jersey have declared it to be a misdemeanor to make either directly or indirectly any false statement in writing respecting the financial condition of any person or corporation for the purpose of obtaining loans, credit, or property. New York has also declared it to be a misdemeanor to circulate a false rumor derogatory to the financial condition of any bank, building association, etc., or to make a false statement in connection with the sale of real estate; the same state has made it a felony to falsify books or reports of corporations subject to the banking law. Maryland has made more stringent the law against misbranding

gold and silver. New York and Virginia have extended the law of forgery to include writings not heretofore the subject of this crime. Gas has been made the subject of larceny in South Carolina, and ice in ponds the subject of the same crime in New Jersey.

Two laws have been enacted, one in Virginia and one in South Carolina, that will doubtless have to pass the test of constitutionality. The Virginia law makes it a misdemeanor to borrow money from any person conducting the business of a sales tobacco warehouseman upon a written promise to sell tobacco through such person and the failing to comply with the conditions of the promise. The South Carolina act provides that if any person shall enter into a contract to lease lands or to cultivate lands on shares of crops, and shall, without just cause, and with intent to defraud the owner, abandon or refuse to enter into possession and cultivation of said lands to the injury of the owner, he shall be guilty of a misdemeanor. The statute further provides that the lessor shall likewise be guilty of a misdemeanor if, in breach of the agreement, and with intent to cheat and defraud the lessee, he shall withhold from him the entry and possession of the land. These two statutes, necessary as they are to meet the peculiar economic situation of the states in which they were enacted, embody a distinct departure from the principles of the criminal law, in that the first statute makes a mere failure to pay a debt a crime, and the second makes the like provision for a failure to cultivate lands in breach of contract. If these laws pass the test of constitutionality, we may look for many more of similar character, for they are designed to meet a very real economic situation in the southern states. South Carolina has also made it an offense for an employer of labor who requires notice from his employees of the time such employee will quit work, to fail to give notice to such employees of his (the employer's)

purpose to shut down or stop work.

Laws protecting females and minors have been enacted in New Jersey and Kentucky. In New Jersey it has been made a misdemeanor to furnish cigarettes, cigarette papers, and tobacco to minors under 18 years of age. Kentucky has made it a crime to induce a female to enter a house of prostitution; to aid in juvenile delinquency; and to sell liquors, to minors, or to allow minors to enter a saloon.

Laws for the Protection of the Ballot.—New York and Minnesota have enacted corrupt-practices acts for the better protection of the ballot; and Maryland proposes a change in her constitution so as to disfranchise and to debar from any office of profit or trust any person who bribes another to vote or refrain from voting at elections, or knowingly votes illegally, and to allow the legislature to make the person offering a bribe at elections alone guilty. (See also II, *Popular Government and Current Politics*.)

Laws for the Prevention and Detection of Crime.—Several states have enacted laws looking to the prevention and detection of crime. A statute in New Jersey makes stringent regulations governing the manufacture, sale, carrying, etc., of deadly weapons, forbids the concealed carrying of such weapons without a permit, and requires retail dealers to keep a register of such sales. South Carolina provides for a force of rural police. South Carolina and Kentucky have provided for exhuming bodies of persons supposed to have been murdered; South Carolina also makes it a misdemeanor to embalm a dead body without permission of the coroner or magistrate when there is suspicion of crime in connection with the cause of death. A proposed law of the federal Government would prohibit the publication in newspapers of the details of a crime committed. This bill provides:

It shall be unlawful for any person, corporation, or association to print or publish in any newspaper or other publication in the District of Columbia an account of any murder, or alleged murder, or any other actual crime, suicide,

or other accident, injury, or tragedy of any kind wherever the same may have been committed or happened, or alleged to have been committed or happened, other than a mere statement of the fact that such a crime, tragedy, or accident has happened, or is alleged to have happened, without details or comments of any kind with respect to such crime, accident, or tragedy, or in respect of, or about, any person connected with or related to, or alleged to be, or to have been connected with or related to the same.

That any person, corporation, or association who shall violate any of the provisions of this Act shall be guilty of a misdemeanor and shall be fined not less than five hundred nor more than five thousand dollars, to which may be added imprisonment in the District Jail or Workhouse for not exceeding one year.

An important act has been passed in Kentucky defining and punishing what is known as "sweating" or the "third degree." The statute defines "sweating" to be "the questioning of a person in custody charged with crime, in an attempt to obtain information from him concerning his connection with the crime or knowledge thereof, after he has been arrested and is in custody, as stated, by plying him with questions or by threats or other wrongful means extorting from him information to be used against him as testimony upon his trial for such alleged crime." The statute further provides that confessions obtained by means of such sweating shall not be admissible in evidence; and makes the punishment for sweating a fine of not less than \$100 nor more than \$500, or confinement in the county jail not less than ten nor more than 60 days, or both fine and imprisonment at the discretion of the court or jury trying the case. A similar law has been introduced in the legislature of Rhode Island.

Punishment for Crime.—South Carolina has joined the increasing number of states that have substituted electrocution for hanging. A similar law has been proposed in Louisiana. Virginia has joined North Carolina in providing for the infliction of the death penalty for the crime of burglary. Kentucky amended her law providing for the parole of convicts so as to provide that on a con-

vict's application for parole, not only shall his record for deportment in the penitentiary be considered, but also the record of the trial and a statement of the judge presiding at the trial of all the facts proved on the trial which he deems important for the full comprehension of the case. An act also provides that hereafter the Board of Prison Commissioners, which paroles prisoners, shall be appointed by the governor, with the advice and consent of the senate, instead of being elected by the legislature. (See also XVIII, *Correction*.)

Miscellaneous.—Other statutes relating to criminal law enacted during the year 1912 are: statutes making "book-making" a crime (South Carolina); extending the law relating to arson (South Carolina); burglary (Rhode Island); and public drunkenness (Georgia); making the unauthorized use of automobiles a crime (Virginia); restricting the crime of grand larceny (New York).

An important step has been taken by the Massachusetts legislature, which is likely to be the forerunner of similar legislation in other states. A recent act provides:

Any person in this commonwealth who is kept in confinement awaiting trial for more than six months after having been indicted, and who is finally acquitted or discharged without trial, if the delay in trial was not at his request or with the consent of his attorney of record, may receive compensation for the period of his confinement after the lapse of said six months and until his acquittal or discharge: provided, that the payment of compensation is approved by the judge who presided at the trial, or in the case of a discharge without trial, approved by a justice of the Superior Court sitting at a session for criminal business in and for the county in which the indictment was found. Such compensation shall be paid by the county in which the indictment was found and shall be equivalent to the amount which the indicted person earned or received from his regular employment for any period of equal length during the two years immediately preceding his confinement; and if he had not employment,

the compensation shall be such reasonable sum as shall be determined by the judge who presided at the trial, or in case of a discharge without trial, by a justice of the Superior Court sitting at a session for criminal business in and for the county in which the indictment was found. The judge or justice, upon application by the person acquitted or discharged, shall give a hearing at which such person or his representative may be present, if he so desire, and the district attorney or other officer representing the commonwealth or the county may also be present, and the person acquitted or discharged and the commonwealth or county may offer testimony as in any civil case. The decision of the judge or justice shall be final.

This law is most important in that it introduces into our law a principle, known indeed to other systems of law, but heretofore absent from the common law—the principle that the state should reimburse those suffering from the delays of the criminal law. The logical extension of this principle, an extension that is being much discussed, is that the state should also reimburse a person who has suffered from the miscarriage of the administration of the criminal law as well as from its delay. Thus it is proposed to compensate a person who has been convicted of a crime, suffered imprisonment therefor, and is subsequently shown to have been innocent.

Another radical step was proposed in a bill introduced in the last session of the New York legislature. This bill provided for the election in every county of a public defender. The duty of this officer was to defend, without charge, and to represent generally, all persons who had been indicted by the grand jury of the county who were without means to employ counsel and who desired the services of said public defender. He was to have the power to employ deputies, clerks, etc., and also counsel to assist him at the trial of important cases. The bill did not come to a vote during the session of 1912, but the matter is still being agitated.

X. PUBLIC RESOURCES AND PUBLIC WORKS

PUBLIC LANDS

MORRIS BIEN

Legislation.—For many years the Secretaries of the Interior, Commissioners of the General Land Office and special commissions appointed by Congress or by the President have reported that the plan of disposing of the public lands enacted many years ago and well adapted to the prairie country in the Mississippi Valley and the Middle West, is wholly inadequate for the present needs of the country in disposing of lands in the arid and semi-arid region, where the same possibilities of agriculture under natural conditions of rainfall do not exist. To remedy in part the difficulties in question, Congress passed, on June 6, 1912, an important bill governing entries under the general homestead law, which reduces the period of residence heretofore required from five years to three years. To offset this shortening of the required time of residence and to make sure that the homesteader shall become an actual resident on the land, he is required to cultivate not less than one-sixteenth of the area of his entry beginning with the second year of the entry, and not less than one-eighth beginning with the third year of the entry and continuing until final proof is made of the necessary requirements of residence and cultivation. In addition to this, the law provides that the entryman shall be entitled to a continuous leave of absence from the land for a period not exceeding five months in each year after establishing residence. Before this law was passed, absence was permitted only in special cases of sickness, destruction of crops, or other inevitable casualty, and the

law did not take into account the severe winters which prevail in most of the area now subject to homestead entry, a condition which had been met from time to time by special statutes regarding particular states or parts of states.

By an Act approved Feb. 19, 1912, Congress extended to the Choctaw and Chickasaw Nations in Oklahoma the principles of the Act of June 22, 1910 (see *AMERICAN YEAR BOOK*, 1910, p. 303), which permits the acquisition of title, for agricultural purposes under the public-land laws, to the surface of land valuable for coal and asphalt. This leaves the minerals open to special disposition by sale or lease independently of the agricultural utilization of the surface. Congress further extended the application of the principle of the Act of June 22, 1910, by the Act of Aug. 24, 1912, which provides for agricultural entries to give title for agricultural purposes to the surface of lands containing oil and gas.

A bit of legislation of small intrinsic importance which may be fruitful of important results is the section of the Act of Aug. 24, 1912, which authorizes the Secretary of the Interior to patent not to exceed 7,680 acres of semi-arid land to Luther Burbank for the purpose of propagating the spineless cacti, erecting necessary improvements and clearing and tilling the soil. Payment is to be made at the rate of \$1.25 per acre, except in cases where the land is within the limits of any railroad grant, where the price will be \$2.50 per acre. No patent is to issue until Burbank shall have

had upon said land or some part thereof for a period of two years at least 100,000 growing plants of spineless cacti of a character suitable for animal food. The selection of land requires the approval of the Secretary of the Interior and must be unsuitable for agricultural purposes under present methods of agriculture. In the discussion upon this bill the hope was expressed that by making the desert wastes capable of producing spineless cacti, the range suitable for grazing cattle might be very greatly increased, with the expectation that the price of beef would thereby be reduced.

Sale of Indian Lands.—About 1,400,000 acres of land located within several Indian reservations in Montana, Wyoming and Utah were placed on public sale during the year. These lands are not particularly valuable, most of them having been on the market for some years at higher prices than those fixed for the present sale. During the year the Bureau of Indian Affairs has proceeded with the allotments of lands to Indians on the various Indian reservations: approximately 144,000 acres have been allotted to 651 Indians. In most of these cases the title which will pass to the Indians is restricted by the provision that the land can not be sold in whole or in part nor charged with any debt of any kind for a period of 25 years. Indians of this class are called non-competent Indians. The Secretary of the Interior has, however, the authority to designate as competent those Indians who, in his opinion, are qualified to manage their own affairs, and thus to relieve them of these and all other restrictions regarding their property and possessions.

Carey Act Lands.—By the Act of Aug. 18, 1894, Congress provided for the donation to each of the desert-land states of 1,000,000 acres of desert land which they should cause to be irrigated and reclaimed, in order that the same might be disposed of to actual settlers in small tracts. Later legislation increased the area to be donated to some of the states. Under the provisions of this Act the several states make contracts with companies for the

construction of irrigation works, and when water is ready to be furnished to the lands, the United States patents to the state the lands so ready for reclamation. The state thereafter sells the lands to actual settlers in small tracts at a nominal charge for the land, but with the requirement that the reasonable cost of the irrigation works, as agreed upon between the state and the irrigation company, shall be paid by the settlers. In some cases the anticipated result of a successful irrigation system has been realized, but in order to avoid some of the unfortunate conditions that have arisen in connection with some of these projects, the Department of the Interior is now giving each project closer scrutiny, careful examination being made of the lands it is proposed to irrigate and also of the source of the water supply and the practicability of the proposed scheme.

Public Land Surveys.—In the YEAR BOOK for 1910 (p. 303) reference was made to the Act of June 25, 1910, which practically abolished the contract system of surveying the public lands and authorized the Secretary of the Interior to have the surveys made by competent surveyors selected by him. The year 1911 was the first year in which the system was in full force, and the first year's work is regarded as satisfactory. Approximately 30,000 miles were surveyed in 1911 with a direct saving to the Government of about \$150,000. In addition to this there is a saving of from one to two years in the time required for the final approval of the surveys so performed.

Classification of Public Lands.—The activities of recent years in throwing greater safeguards about the disposition of public lands and providing special means to prevent the wholesale acquisition at practically nominal rates of lands especially valuable on account of coal, oil or other minerals has led to special care in the classification of the public lands before sale or other disposition. For many years the only classification attempted by the Government was that of the sur-

veyors who subdivided the land, and their inexpert reports were of comparatively little value. Great areas of lands valuable for minerals of one kind or another were disposed of under the general public-land laws on nominal payments, and even under the laws governing the disposition of lands valuable for coal, oil, phosphates, etc., payment was made at a flat price, irrespective of the real value of the land. At the present time an important part of the work of the Department of the Interior is that of classifying the public lands. The work is done by the Geological Survey, a large part of the field work involving the determination of the values of the coal lands, and the segregation of the lands valuable for gas, oil, phosphates, or other minerals. (See also *Mineral Resources, infra.*)

Disposition of Public Lands.—The total area of public and Indian lands entered during the fiscal year ending June 30, 1912, was 14,574,688.82 acres, a decrease of more than 3,000,000 acres as compared with the area entered in the year 1911. The total cash receipts from the sale of public lands during the fiscal year ended June 30, 1912, were \$6,671,718.54. From the sale of Indian lands there was received in addition \$2,284,538.37. These figures represent a decrease of about \$1,000,000, as compared with the receipts for the fiscal year ending June 30, 1911. The area patented and finally disposed of during the fiscal year ending June 30, 1912, was 10,135,475, a decrease from the year 1911 of more than 2,000,000 acres. About one-half the area patented was taken under the homestead law.

MINERAL RESOURCES

U. S. GEOLOGICAL SURVEY

GEORGE OTIS SMITH

Scope of the Work.—On May 24, 1912, the United States Geological Survey completed its thirty-third year. Beginning with an annual appropriation of \$100,000 and with a force of less than two score scientists and clerks, it has enlarged its activities until it now expends more than \$1,500,000 a year and carries on its rolls 800 or more regular appointees, besides many assistants during each field season. The work of the Survey has a wide range, varying from researches in pure science to investigations whose bearing is strictly economic. In response to almost any inquiry that may be made relating to the nation's mineral resources, some Survey report or discussion can be found, perhaps prepared along the lines of pure science and embodying philosophic treatment, yet now available and adaptable for some wholly utilitarian purpose.

Publications.—The Survey has published to the present date 1,200 books, which comprise, however, a far greater number of separate reports, and 2,100 maps, the total of the editions running up into tens

of millions. During the fiscal year ended June 30, 1912, it published 181 new books and 36 reprints, aggregating 467,728 copies, and 90 topographic maps aggregating, including reprints, 982,412 copies. It distributed during the same year 522,930 books and 684,129 maps.

Topographic Maps.—The first word in the Survey's activities is the topographic map as a necessary basis for geologic and engineering operations. This great "mother map" of the country is being constructed at the rate of about 250 sq. miles a step, and the Survey is taking one of these steps every fourth day, that is, from 90 to 100 new maps are published annually. Nearly 40 per cent. of the United States has been thus far covered, the scales generally used being 1:62,500 (approximately 1 mile to the inch) for the more closely settled areas, 1:125,000 (approximately 2 miles to the inch) for the sparsely settled regions of high relief, and 1:250,000 (approximately 4 miles to the inch) for reconnaissance surveys. Larger scales are employed for some special maps, such as those of mining districts, for which the scale may be as large as 1:9,600, 6 inches to the mile.

Coöperation between the federal

Survey and state geological surveys and other state organizations is a most important factor in advancing this topographic work, the total amount appropriated by state organizations last year, mostly on the dollar for dollar basis, being approximately \$180,000. (See *State Geological Surveys, infra.*)

Land Classification and Development.—During the last four or five years the U. S. Geological Survey has been called upon in constantly increasing degree to apply the results of its scientific study of the mineral resources of the nation to the problems of the practicable economic development of these resources—their fullest possible utilization with a minimum of waste. The nation is, for instance, the largest owner of coal lands, oil lands, phosphate lands, and waterpower sites in the United States, holding the title to an area of such mineral lands aggregating more than 90,000,000 acres. In 1906 the Government began the policy of withdrawing from public entry all lands believed to be underlain by coal, and since that time many other withdrawals have been made, including not only coal land, but also land containing the other resources mentioned. This action has been taken pending investigation of these resources by the Survey, which in the case of coal lands is followed by their classification, appraisal, and restoration to entry. Lands of the other classes remain withdrawn pending proposed legislation by Congress which shall provide for their proper development. Under the present policy of classifying coal land, adopted April 10, 1909, each 40-acre tract is classified and valued according to the tonnage and quality of its coal, the prices ranging all the way from the minimum of \$20 or \$10 an acre, according to whether the land is situated less or more than 15 miles from a railroad, for land containing lignite, to more than \$400 an acre for land underlain by thick beds of high-grade bituminous coal. In the last three and one-half years, to Dec. 1, 1912, the Geological Survey has classified and appraised as coal lands 17,460,069 acres, with a formal valua-

tion of \$742,638,249. At the minimum price at which such lands were formerly sold, this acreage would have brought only \$296,006,740. Withdrawals of coal land are still outstanding to the extent of 66,000,000 acres, but these lands are being classified by the Survey at a rate approximating 10,000,000 acres a year. Although there is some criticism of such "conservation" of a natural resource, perhaps the best argument as to the soundness of the policy lies in the ready acceptance of the tonnage estimates and valuations by purchasers of coal land, the increasing amount of Government coal land purchased, and the fact that the Survey is constantly receiving requests that certain coal-bearing tracts be classified. Although \$400 or even \$200 an acre may be asserted by speculators to be a prohibitive price, yet when this is stated at the tonnage rate (1 cent or less per ton), it is seen to be very moderate. Some of the coal beds on Government land run as high as 50,000 tons or more of recoverable coal to the acre.

The national Government is also taking an active interest in the public land containing petroleum deposits, with which may be associated natural gas. Large areas of the western oil fields have been examined by the Geological Survey and withdrawals of oil land, based on its reports, have been made aggregating 4,677,302 acres in Arizona, California, Oregon, Wyoming, Utah, New Mexico, Colorado and Louisiana. These lands have been withdrawn from entry in anticipation of much needed legislation, the present gold-placer law under which oil or gas land must be acquired being absurdly inadequate and resulting in fraud and waste. In the belief that the Government should retain a supply of petroleum for the American Navy, in which every new ship is being equipped with oil-burning boilers, the President recently withdrew, on recommendation of the Survey, about 68,000 acres of oil land in California as a naval petroleum reserve. (See XII, *The Navy.*)

The deposits of phosphate rock in Idaho, Wyoming, Utah, Montana

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and Florida are of undoubted great potential value. Those on the public lands are believed to be the largest known deposits, and as a result of investigations by the Geological Survey, 3,291,527 acres of phosphate land now stand withdrawn awaiting legislation to provide for their proper location and development. (See also XXVI, *Agricultural Chemistry*.)

Water Resources.—An important phase of the Survey's work is its study of the water resources of the country, in aid of economic work relating to inland navigation, development of water power, prevention of floods, reclamation of arid lands by irrigation, drainage of swamps, and municipal water supply. The study of the flow and volume of streams and of the character of their water, together with investigations of underground water, has been systematically carried on for many years. Records of the daily flow of streams have been collected at more than 1,500 stations throughout the United States for long periods. Last year 1,105 stream-gauging stations were maintained.

A detailed study of western rivers by Survey engineers during the last three years has developed the fact that many very great water powers are still owned by the Government. A large number of power sites on public lands have been withdrawn from entry, aggregating 1,831,941 acres, distributed along the important power streams of the western states. Reservoir site withdrawals have also been made to the extent of 101,758 acres.

Alaskan Resources.—The Geological Survey's work in Alaska is being pushed steadily ahead. The present annual appropriation for this work is \$100,000. As the territory embraces over half a million square miles the investigations are divided into two classes, broad reconnaissances and detailed surveys, both topographic and geologic. During the field season of 1910, areas amounting to 13,815 sq. miles were covered by reconnaissance topographic surveys, the resulting maps being published on a scale of 1:250,000 or 1:500,000, and 36 sq. miles

by detailed topographic surveys, on a scale of 1:62,500. In the same season geologic reconnaissance surveys were made of 8,635 sq. miles and detailed geologic surveys of 32 sq. miles.

STATE GEOLOGICAL SURVEYS

FRANK W. DEWOLF

The work of the 35 state surveys is of great importance to the country. During 1912 they employed approximately 100 men on continuous service and expended about \$430,000 from direct appropriations by the various states. In addition, about \$180,000 was contributed to coöperative work by federal bureaus. Work of the various geological surveys which has been under way for several decades now forms the basis for estimates of our mineral resources with a view to conservation and intelligent development. The new popular interest in conservation has already reacted to strengthen and enlarge the work of the state organizations, although the official surveys in Maine and South Carolina were abandoned during the year.

Topographic Maps.—The preparation of topographic maps in coöperation with the U. S. Geological Survey was continued in 13 states and resulted in the completion of an area of about 9,000 sq. miles. The maps are prepared primarily as a basis for geologic studies, but serve many other useful purposes, and are rapidly coming to be in great demand. A large area of the country was covered topographically by the Government, without the help of co-operating states. (See also *U. S. Geological Survey, supra*.)

Economic and Detailed Areal Surveys.—A growing part of the work of the state surveys is of practical or economic character. It is devoted either to a particular resource of importance, or to a particular area in which several subjects may warrant investigation. Most of the reports for counties, quadrangles, or other units, are mainly concerned with practical or applied geology. Progress in the various states for the year 1912 is summarized in the following pages.

Stone and Minerals for Building Purposes and the Arts.—Important deposits of stone and minerals available for building, or for use in cement, concrete, road-ballast, or in the arts, are found in many states. Investigations were made as follows:

Field work in the marble belt of Alabama was carried on. Reports on limestones and cement materials of northwestern Georgia and also of Illinois were published. Scientific studies of all the dolomites of Iowa were carried well toward completion. Preliminary papers on the Lehigh district and on the York Valley limestone belt of Pennsylvania were in preparation. Concrete materials were studied in Iowa, and examinations of general quarry conditions in Minnesota and Nebraska were under way. Tests of the strength and electrical resistance of building stones were carried on in Vermont. A report on important sandstones of the Lake Superior shore of Wisconsin was completed. Slates in the western portion of Pennsylvania and Virginia were investigated and reports advanced well toward publication.

Clay deposits of Colorado, east of the mountains, and elsewhere in the vicinity of large towns, were tested for publication about the end of the year. In Illinois, a report on the chemistry of sand-lime brick was issued and another on "No. 2 fire clays" was in preparation. In Minnesota and Nebraska, general clay reports, accompanied by practical tests, were carried well toward completion. A bulletin on phosphate and fuller's earth of Florida was issued.

Sand for glassmaking was investigated in eastern Missouri, and a report was published in Oklahoma. In the same state a bulletin on volcanic ash was issued and another on gypsum was in preparation.

Coal and Lignite.—A number of investigations mentioned in the last issue of the *YEAR BOOK* (p. 586) were carried to completion, and others were continued. The new map of the Coosa coal fields of Alabama is being engraved for early issue. Part II of a report on coal mining and conservation in Arkansas was distributed and attracted wide

attention. In Illinois, a coöperative mining investigation has been finished and a number of special reports will be published during the next six months. In Missouri, Oklahoma and Washington the results of recent coal surveys were issued. The Broad-Top coal field of Pennsylvania was surveyed in detail. New lignite beds were located and mapped in North Dakota. Reports on the lignite of South Dakota were included in a number of county reports in preparation. In Tennessee coals were examined, and in the southwestern part of Virginia coals underlying some 1,500 sq. miles of territory were mapped in coöperation with the U. S. Geological Survey. Important coal fields of West Virginia were described in two county reports issued during the year. Three other reports were in press, and two were in preparation.

Metallic Ores.—A report on the Virginian copper district in Virginia was made ready for printing, and another devoted to gold deposits of the James River basin was sent to press.

A report on the iron ores of Missouri was published during the year. In Alabama, the third edition of a report on iron-making was nearly all in print. Progress was made in reports on the red iron ore of the Chattanooga district of Tennessee; the ores of the Blue Ridge and of western Virginia; the Florence district of Wisconsin.

In Colorado a number of camps which were important producers of silver and lead are now yielding zinc, and locally give promise of copper. Detailed topographic and geologic maps of the Monarch-Tomichi district and of the Alma district were made ready for printing. The Gold Brick district and the Bonanza district were studied and mapped. A report on the Rabbit Ear Range was nearly finished. The lead and zinc field of northwestern Illinois was thoroughly covered in a report now in press. Work on the adjoining district in Wisconsin was in progress. A new report on zinc of northeastern Tennessee was published.

Oil and Gas.—In Alabama a co-

operative report on the Fayette Co. gas fields was awaiting printing. Petroleum industries of southern California were investigated. A bulletin on the main oil fields of Lawrence and Crawford counties, Ill., was in press, and progress reports from scattered fields were in preparation. The Carlyle field was described in a coöperative bulletin. A detailed bulletin on the Ponca City oil and gas field, Okla., was in press, and a reconnaissance survey in southwestern Oklahoma was completed. Carbon and Converse county fields of Wyoming are described in a report which was in press, and the Nacrona Co. field, in a bulletin in preparation.

Miscellaneous Reports and Maps.—A state map of Colorado, showing topography and hypsometric coloring, and another showing geology, were nearly finished. A base map of Illinois on a scale of 8 miles to the inch, and another for geology, were published. A model showing topography and geology of Minnesota was in preparation. A base map of Tennessee, on a scale of 1:500,000, was finished.

Reports relating to statistics and general conditions of the mineral industries were prepared in most of the states. A large volume describing the resources of Michigan was begun, and two volumes of scientific and economic importance on the Keweenaw Series, by A. C. Lane, were published. General reports were published on the geology of Tennessee and on metal mining in Washington. Chemical studies on the oxidation of the natural sulphides were continued in Missouri. A report on peridotite dikes of Pennsylvania, and another summarizing engineering data from topographic surveys, were in press in Pennsylvania. In Vermont a report was prepared regarding the general geology of the Green Mountain region and the history of Lake Champlain. An interesting contribution was finished on rill-channels in limestone.

Detailed Areal Surveys.—In many state general detailed reports, based on topographic maps, and involving a special study of one or more min-

erals of commercial value, were made as usual. For the want of a better name they are classed as detailed areal reports.

Studies of the foothills formations of the Front Range in Colorado were made ready for publication. Reports on the geology of the coastal plains of Georgia and of Virginia were published. In Illinois, coöperation with the U. S. Geological Survey resulted in the survey of eight quadrangles. One bulletin on the Peoria district was published and two folios were in press. Areal work was extended to several counties of Iowa and the Pleistocene of the northwestern part of the state was under investigation. In Michigan, 200 sq. miles of pre-Cambrian formations, west of the Gogebic iron range, were surveyed. In Minnesota four quadrangles were mapped. In Missouri, reports on Jackson Co. and on the Rolla quadrangle were made ready for the printer. Four counties in Nebraska were examined in detail. In Oklahoma the Nowata, Vinita and Claremont quadrangle reports were prepared in coöperation, and the field work was finished for the Hominy quadrangle. Two counties in the northwestern part of South Dakota were completely surveyed, and reports on four counties in the southwestern part were published. In Tennessee one quadrangle was under survey; and in Vermont two quadrangles in the northern part of the state were mapped. A large area including the coal fields of southwestern Virginia was surveyed. In West Virginia a series of county reports including geology, topography, and soil conditions are being issued at a rapid rate. Reports for two counties were published, three others were in press, and the field work was finished for two additional counties. In Wisconsin general areal surveys were continued in the northwest part of the state.

Surface and Underground Water.—As the density of population of the United States increases, more and more study is needed to supply adequate water for municipal use and for manufacturing purposes. In a number of states detailed surveys

as to quantity and availability of water are in progress. In Alabama a great many analyses of waters from wells and springs were made, and gauge readings of important streams were continued. In Colorado mineral waters were studied and 200 samples were collected for analysis. An investigation was also made of the disappearance of Arkansas River, with the idea of protecting the rights of water users. Connecticut and Georgia coöperated with the U. S. Geological Survey in the study of underground water supply. A report on the underground waters of western Florida was published. In Illinois the artesian waters of the LaSalle region were analyzed in coöperation with the State Water Survey. A notable report on the artesian waters of Iowa, prepared in coöperation with the U. S. Geological Survey during many years, was in press; also industrial waters were studied and gauges maintained on a number of rivers. A bulletin on underground and surface water of North Carolina was completed, and a report on mineral waters of Oklahoma was in preparation. Investigations of underground waters in North Dakota have now been completed for the eastern half of the state. Studies were continued

in South Dakota to disclose the amount and cause of decrease of artesian pressures. In Tennessee a report on the Doe River was in progress in coöperation, a bulletin on water powers of Tennessee was under way, and a survey of three important rivers was completed and published, in coöperation. In Virginia a volume on the waters of the coastal plains was published. In Wisconsin a report on the water supply was nearing completion.

Soil Surveys.—Soil surveys of growing importance were under way in a number of the states. In many cases they were made by the geological surveys in coöperation with the U. S. Bureau of Soils. A report on the soils of Florida was published. Two volumes on the soil geology of the southern and the northern peninsulas of Michigan, including agricultural and climatic conditions, were distributed. In North Carolina a report on swamp lands was in progress. In Tennessee one county was surveyed. In West Virginia complete county reports, which are being published at a rapid rate, include soil maps and descriptions prepared in coöperation. The soils of northwestern Wisconsin were described in a recent publication of the Wisconsin Survey.

WATER POWERS

H. A. VON SCHON

Development.—The development of water power may be accomplished by concentrating a stream's gradual fall at one point behind a dam, or by diverting the river's flow in canals, flumes or pipes to a lower downstream point; and by passing the falling water column through turbines and tubes connected to them from the upper to the lower water level and thus converting about 80 per cent. of the natural energy into useful work on the turbine shaft.

Water power is the most permanent, abundant and economic energy source in the service of man. Its origin is precipitation and gravity, and it is thus ever replenished and constant; it may be developed from every flowing stream, the ocean's

tides and waves, and the application of its energy to the mechanical work agencies is automatic and continuous, involving no waste or diminution of the original power source.

The history of water power utilization begins with the civilization of the human race; the Egyptians floated stationary paddle wheels on the Nile, transmitting the wheels' motion to pumps and raising water from the river for the irrigation of their farms. Water power ground corn and wheat from time immemorial, marked the location of settlements and towns, and developed some of the most important modern industries. Before steam power was known water power had only the wind as a rival power source, the per-

fection of the steam engine seemed, for a time, to relegate water power to oblivion, but transmission of the electric current not only reinstated it in its former superiority, but opened for it a much broader and more valuable field of usefulness. From the operation of the small grist mill on the murmuring creek, water power progress is evidenced by the harnessing of the Father of the Waters for a power yield of a quarter-million horse power at one point to light the houses and propel the machinery in many towns and cities hundreds of miles from the source of the power.

The cost of water power development varies according to physical conditions from \$100.00 to \$200.00 per horse power, and the value of power may be from \$20.00 to \$100.00 per horse power per year. A water power of normal development conditions can, at present, compete successfully with the most economic power product from any other source, and the gradual reduction of available fuels and their constantly increasing values is a guarantee that water power will maintain this vantage in the future.

Investigations of Power Resources.

—The study of our water-power resources has only of recent years commanded the attention which its importance demands. The U. S. Geological Survey is now carrying on systematic observations of stream flow in all sections of this country and several states are engaged in similar work. Examinations of reservoir facilities have also been entered upon by the federal Government and the states of New York, Pennsylvania, Maine, Wisconsin and Massachusetts. The determination of the fall of water courses is being pursued by the national Government and some states, and the development of river's topography is likewise progressing. However, it will be several years before all the data have been collected which are required for an accurate inventory of the available water power and the advantageous development sites. (See also *U. S. Geological Survey, supra.*)

Water Powers of the United States.

—The available water power in the

United States has recently been estimated by the Government at 60 million horse power, of which approximately four million horse power is now in service. The largest development is that of Niagara Falls, with 260,000 h. p. on the American, and 118,000 h. p., on the Canadian side; this is probably about one-fourth of the output capacity of that power opportunity. Power sites now in a stage of development include, in addition to about 120 of smaller output:

	Horse Power.
Mississippi River, at Keokuk, Iowa	250,000
White River, near Tacoma, Wash.	100,000
Tennessee River, near Chattanooga, Tenn.	50,000
Tallulah River, in northern Georgia	50,000
Coosa River, in southern Alabama	50,000
Connecticut River, at Shelburne Falls, Mass.	30,000
Yadkin River, in North Carolina	30,000
Missouri River, at Rainbow Falls	28,000
Battle Creek, Colorado.....	27,000
Ocoee River, Tennessee.....	22,000
Au Sable River, Mich.....	20,000

The capital now invested in water power developments in the United States aggregates one billion dollars.

Flow Regulation.—As water-power values grow, the subject of flow regulation becomes of first importance, as many of the otherwise most resourceful American water-power rivers are subject to such extreme flow fluctuations that commercial water-power utilization is hardly practicable. This is one of the leading issues of the general conservation question, as partial flow regulation of such rivers as the Ohio, Tennessee, Cumberland, Missouri and Mississippi would not only diminish the destructive floods, but would create water-power values of sufficient earning capacity to repay the investment in flow regulation works. A beginning on flow regulation has been made by the federal Government on the Mississippi River headwaters in Wisconsin and Minnesota, and New York, Pennsylvania and Wisconsin have inaugurated water

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conservation programmes which are calculated greatly to enhance the water-power resources of these states. A noteworthy private undertaking of this character is that of the Wisconsin River Improvement Co., representing the water powers of that river, who have within the last five years constructed sufficient storage reservoirs to conserve about three-fifths of the river's flood discharges.

Public regulation and control of water powers are exercised by the national Government and the states. Water powers on the public domain, forest reserves, and military and Indian reservations may be developed under leases from the proper department; a rental is charged for the occupancy of the necessary lands. Developments on navigable rivers require Congressional consent and are subject to the supervision of the War Department in accordance with a general Act of 1910 which authorizes the collection of compensation from water-power users for direct benefits derived from any storage reservoirs maintained by the Government, or from the acquisition and maintenance of any forested watershed, or lands at the headwaters of such stream, wherever such shall be for the benefit of navigation. The

constitutionality of imposing a tribute for benefits growing out of Government works not distinctly authorized by the Constitution is questioned by some leading authorities. Government control over water-power development on the public domain, reservations, and on navigable rivers is practically absolute.

State Regulation.—New York State regulates water-power companies doing electric power business through a public service commission which has power to enforce just and reasonable current charges. Wisconsin has comprehensive laws controlling water powers and regulating rates charged to the public for power service. In Vermont a commission has authority over electric light and power companies. The railroad commissions of Georgia and Michigan exercise similar functions. In Massachusetts the Board of Gas and Electric Light Commissioners regulate the bond and stock issues and rate charges of water-power companies, and like authority is vested in the public service commissions of South Carolina, Ohio, New Jersey and Maryland. Generally speaking, a uniform water-power policy in the entire country is much needed and this is now a live question before the public.

RECLAMATION

FRED G. HARDEN

IRRIGATION

The Census of Irrigation.—The most interesting feature of the year has been the publication of the preliminary report of the census of irrigation taken in 1910 by the Bureau of the Census under the provisions of the Act of Congress of Feb. 25, 1910 (36 Stat. 237), which provided among other things that in the enumeration of the Thirteenth Census inquiries should be made regarding the following items: the location and character of irrigation enterprises; the quantity of land irrigated by counties and states under state and federal laws; the prices of irrigated lands with water rights; the character and value of crops pro-

duced on irrigated lands; the amount of water used per acre and whether it was obtained from national, state or private works; the location of the various projects and the methods of construction employed, with facts as to their physical condition, and the amount of capital invested in such irrigation works. In December, 1911, and throughout the year 1912 bulletins have been issued by the Bureau of the Census showing the data required by this law for the United States, and by counties for the different states in which irrigation is extensively practiced. The leading facts for the arid and semi-arid states disclosed by the census are summarized in the tables on the following pages.

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ACREAGE IRRIGATED, 1909 AND 1899, BY STATES

STATE	Acreage irrigated, 1909	Acreage irrigated, 1899	Per cent. of increase, 1899-1909	Acreage enterprises were capable of supplying in 1910	Acreage included in projects complete or under construction
Arizona	320,051	185,396	72.6	387,655	944,090
California	2,664,104	1,445,872	84.3	3,619,378	5,490,360
Colorado	2,792,032	1,611,271	73.3	3,990,166	5,917,457
Idaho	1,430,848	602,568	137.5	2,388,959	3,549,573
Kansas	37,479	23,620	58.7	139,995	161,300
Montana	1,679,084	951,154	76.5	2,205,155	3,515,602
Nebraska	255,950	148,538	72.3	429,225	680,133
Nevada	701,833	504,168	39.2	840,962	1,232,142
New Mexico	461,718	203,893	126.5	644,970	1,102,297
North Dakota	10,248	4,872	110.3	21,917	38,173
Oklahoma	4,388	2,759	59.0	6,397	8,528
Oregon	686,129	388,310	76.7	830,526	2,527,206
South Dakota	63,248	43,676	44.8	128,481	201,625
Texas	164,283	40,952	301.2	340,641	753,699
Utah	999,410	629,293	58.8	1,250,246	1,947,625
Washington	334,378	126,307	164.7	470,514	817,032
Wyoming	1,133,302	605,878	87.1	1,639,510	2,224,298
Total	13,738,485	7,518,527	82.7	19,334,697	31,111,142

¹ Exclusive of rice irrigation.

In addition to the acreage irrigated in the arid and semi-arid states in 1909, there was 694,800 acres of rice irrigated in Texas, Louisiana and Arkansas, and 28,919 acres of miscellaneous crops in the humid states, making a total of 14,462,204 acres under actual irrigation in that year in continental United States. The rice enterprises were capable of irrigating 950,706 acres, and of serving 1,134,322 acres ultimately.

The most striking facts shown by the foregoing table are the large area included in projects, and the acreage which the enterprises were able to supply with water in 1910, but which had not been irrigated in 1909. It has been claimed by stu-

dents of conditions in the irrigated regions that probably 20 per cent. of the area included in irrigation projects can never be irrigated profitably, because of roughness, elevation, alkali, waterlogging, or other unfavorable conditions. Even with this large acreage deducted, however, the acreage included in projects, but not irrigated in 1909 was practically as large as that which has been brought under irrigation in more than 50 years of irrigation development.

The acreage irrigated in 1909, the acreage for which water was available in 1910, and the total acreage in projects completed or under construction July 1 of that year in the arid and semi-arid states were classified by type of enterprise, as follows:

TYPE OF ENTERPRISE	Acreage irrigated in 1909	Per cent.	Acreage for which water was available in 1910	Acreage included in projects
U. S. Reclamation Service	395,646	2.9	786,190	1,973,016
U. S. Indian Service	172,912	1.3	376,576	879,068
Carey Act	288,553	2.1	1,089,677	2,573,874
Irrigation Districts	528,642	3.8	800,451	1,581,465
Coöperative	4,643,539	33.8	6,191,577	8,830,197
Commercial	1,451,806	10.6	2,424,116	5,119,977
Individual and Partnership	6,257,387	45.5	7,666,110	10,153,545
Total	13,738,485	100.0	19,334,697	31,111,142

The striking fact shown by the above table is the very large percentage of the acreage irrigated which was and will be supplied by enterprises owned or controlled by the water users themselves. Of the acreage irrigated in 1909 nearly 84 per cent. was served by such enter-

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prises. Besides this acreage, all that under U. S. Reclamation Service and Carey Act projects, and much of that under commercial enterprises is to pass eventually to enterprises managed and controlled by the users.

Other important data included in the census statistics are:

Number of independent enterprises, 1909	54,700
Cost of irrigation works:	
Estimated final cost	\$424,281,186
1909	307,866,369
1899	66,962,275
1889	29,811,000
Average cost of systems per acre, 1909	\$22.41
1899	8.91
1889	8.15
Average cost per acre for operation and maintenance, 1909	\$1.07
1899 .....	.38
1889	1.07
Length of ditches in 1909, miles:	
Mains	87,529
Laterals	38,062
Number of reservoirs, 1909	6,812
Capacity of reservoirs, acre-ft.	12,581,129
Number of wells used for irrigation in 1909:	
Flowing	5,070
Pumped	14,558

Number of pumping plants, 1909	13,906
Engine capacity of pumping plants, horse power	248,435
Capacity of pumps, gal. per min.	9,947,909
Acreage irrigated from different sources of water supply, 1909:	
Streams	12,763,797
Flowing wells	144,400
Pumped wells	307,496
Reservoirs	98,193
Lakes	70,638
Springs	196,186
Percentage of total acreage irrigated in 1909 under water rights of different types:	
Riparian rights	2.1
Appropriation and use	34.0
Notice filed and posted	16.2
Adjudicated	35.3
Permit from state....	6.7
Certificate from state	5.7

The following table shows the highest and lowest average yield, in bushels per acre, of the different crops, including corn, wheat, barley, oats, potatoes, and alfalfa, and the highest and lowest average value per acre of the yields. The figures in this table do not represent individual farms, but entire states:

	AVERAGE YIELD		AVERAGE VALUE OF YIELD	
	Highest	Lowest	Highest	Lowest
Corn, bus.	46.0	20.8	\$40.60	\$12.75
Wheat, bus.	28.5	17.7	28.05	15.05
Barley, bus.	42.6	22.6	28.50	11.70
Oats, bus.	49.4	24.2	24.50	11.65
Potatoes, bus.	179.9	65.6	74.70	45.25
Alfalfa, tons.	3.96	2.02	42.30	15.55
All crops			45.90	12.38

U. S. Reclamation Service.—The reclamation law and the main features of the different projects have been described in former issues of the YEAR BOOK (1910, pp. 304-9; 1911, pp. 425-33). The following statistics show the progress on all projects up to June 30, 1912:

Number of projects	28
Area to be irrigated on completion of projects, acres..	3,080,600
Area to which water could be supplied, acres	1,143,000
Area irrigated in 1912, acres:	
Under water right applications	436,500
Under rental contracts, etc.	338,500

Reservoir capacity, acre-ft.	4,835,000
Length of canals built, miles.	6,980
Total length of tunnels, miles	21
Total length of pipe laid, miles	74
Total length of flumes, miles	69
Volume of storage and diversion dams, cu. yd.	8,700,000
Materials excavated, cu. yd.:	
Rock	4,842,000
Indurated	6,047,000
Earth	82,951,000
Dikes, cu. yd.	3,550,000
Concrete, cu. yd.	1,160,000
Water power developed, horse power	21,616

The total allotment to projects up to Dec. 31, 1911, amounted to

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\$95,196,700, of which \$20,000,000 was from the bond loan authorized by the Act of Congress of June 25, 1910, and the balance from the reclamation fund. The disbursements made by the Service during the calendar year 1911 were \$10,494,900.84, bringing the total disbursements up to \$72,234,486.46. Collections made by the Service during the year 1911 amounted to \$2,167,324.62, of which \$568,285.98 represented building charges, \$265,644.56 charges for maintenance and operation, and \$384,458.06 temporary water rentals, the balance resulting from sales, refunds, forfeitures, and miscellaneous sources. These receipts brought the total collections made since the passage of the Reclamation Act to \$6,151,088.47, of which \$1,636,302.81 represented building charges, \$549,009.11 charges for maintenance and operation, and \$1,316,002.11 temporary water rentals. Up to Feb. 29, 1912, the accruals to the reclamation funds for building and operation and maintenance charges were \$4,859,936.91, of which amount \$2,658,407.66 had been collected. Advance payments amounting to \$60,827.29 had also been made.

The Reclamation Service has reached a most critical period in its operations. Large works have been constructed and are in operation, but much land for which it is possible to furnish water is still unsettled, many settlers who have taken up lands are not meeting with success, and returns from crops in some localities are not such as to enable the settlers to meet their obligations to the Government. Director Newell states that a study of the first two or three years after water has been applied to the land shows that as a rule 40 per cent. of the settlers can make their payments without unusual self-denial, 40 per cent. get along after a fashion and ultimately succeed, while 20 per cent. are failures. The large percentage of failures and the low yields per acre for the Reclamation Service projects as well as other irrigated lands, as shown by the census returns above, emphasize the fact that the great needs of the irrigated West are more real farm-

ers, more intensive cultivation, and better crops.

The question of encouraging the settlement of the lands under the Reclamation Service projects by imposing easier residence requirements upon the settlers, and arranging more generous schedules of payments was much agitated during the year. Several changes were suggested, some of which have been put into operation. The extension of the time of payments to 20 years instead of ten has been urged, but has not met with the approval of the Service. The plan of graduated payments has been made optional on the Yuma and Lower Yellowstone projects, the price of water rights with the privilege of graduated payments being somewhat higher than water rights for the same lands paid for at a level rate. Orders have been issued during the year permitting the relinquishment of part of a farm unit, the payments made on the relinquished part to be credited upon the retained part; also permitting proof of reclamation to be made when one-half of the irrigable area has been reclaimed, regardless of the number of payments made. Residence and improvement are not now required until 90 days after the date upon which, according to notice, water will be available. President Taft, in his message to Congress, Feb. 2, 1912, recommended that cultivation, but not residence, should be required during the first two years after entry had been made upon lands taken under the Reclamation Act, and that a patent be granted for lands after five years' cultivation and three years' residence, the Government taking a lien for any unpaid payments. Congress, however, did not amend the Act so as to make this possible.

Carey Act Lands.—Development under the Carey Act (see AMERICAN YEAR BOOK, 1910, p. 304; 1911, p. 425) has gone on even more rapidly than heretofore, the chief present handicap being the difficulty that has been experienced during the past few years in getting issues of irrigation bonds underwritten, due in part to the necessary lack of security for the bonds until the lands have been

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reclaimed, and in part to the cloud placed upon irrigation bonds by a few unscrupulous bond houses.

The following table shows the areas applied for by the states, the segregations made, and the areas patented since the passage of the Carey Act in 1894:

STATE	Acreage applied for	Acreage segregated	Acreage patented
Colorado.....	373,593.56	272,197.98	.....
Idaho.....	3,091,645.59	1,284,304.92	221,084.60
Montana.....	533,588.92	172,409.01	18,296.91
Nevada.....	107,643.88	36,808.59	.....
New Mexico.....	10,164.68	7,564.68	.....
Oregon.....	655,706.19	295,583.55	51,583.13
Utah.....	427,669.74	136,820.63	.....
Washington.....	155,649.39	.....	.....
Wyoming.....	1,760,677.24	987,625.00	97,439.15
Total.....	7,116,399.19	3,193,314.36	388,403.79

Up to June 30, 1911, applications had been made for 2,420,926.32 acres, and withdrawals granted for 1,171,474.02 acres under the Act of March 15, 1910, providing for temporary segregations to the states for a period of one year, pending investigations and surveys preliminary to filing maps and plats and application for a segregation. (See also *Public Lands, supra.*)

Irrigation Districts.—Since the census was taken in 1910, two states, Arizona and Nevada, have passed irrigation district laws. The legislatures of practically all the states having irrigation district laws revised and amended them during their 1911 sessions with a view to improving the management of districts and with the hope of rendering safer and more attractive investment in enterprises of this sort. Irrigation-district development, like that under the Carey Act, has been seriously handicapped during the past few years by the difficulty experienced in getting reliable bond houses to underwrite the bonds. With a view to overcoming this difficulty, the 1911 session of the California legislature created a commission consisting of the attorney-general, the state engineer, and the superintendent of banks. In case a district wishes to issue bonds, this commission causes an examination to be made regarding the water rights, canals, reservoirs, reservoir sites, and works acquired or to be acquired, the market value of the bonds and the feasibility and cost of the project. If the commission finds the project

feasible the district may issue bonds up to 60 per cent. of the aggregate value of all rights, property, etc., included in the project, and such bonds are legal investments for trust funds, insurance funds, banking and trust companies, and state school funds. As yet only one district has applied for authority to issue bonds.

Irrigation in the Humid Sections.—Droughts during the past three summers have caused considerable interest in irrigation throughout the humid sections. Special interest has been shown by truck growers in the vicinity of the larger cities, and in the South. Rainfall records show that but few localities in the humid regions pass through a growing season without one or more periods of drought of sufficient duration materially to lessen the yield or impair the value of the crop. Two systems of irrigation—sub-irrigation from pipes, and overhead spray—have received special attention during the past year. Cheaper methods of distributing and applying water are needed to permit the irrigation of the less valuable crops.

Irrigation Problems.—The large acreage that has been brought under irrigation during the past five years and the rapid increase in cost per acre, both of building and of maintaining and operating systems, have given rise to a number of problems in which great interest has been taken in recent months. Works have been or are being constructed in Idaho, Oregon, Colorado, Wyoming, Nebraska, New Mexico, Kansas, Nevada and California, some one of

which will eventually require a decision by the Supreme Court as to the rights of upper and lower states on interstate streams. Already it has been necessary for the War Department to exert a close supervision over the taking of water from the Rio Grande in order to preserve the navigability of the stream.

Investigations looking to the lessening of the cost of pumping and storing water, reducing losses by evaporation and seepage, and introducing better methods and a higher duty in the application of water to crops have been given considerable attention during the past year. Eight states—Arizona, California, Colorado, Idaho, Nevada, Utah, Kansas and Wyoming—had laws in force in 1912 for investigations into one or more of the following subjects: Water requirements of crops, seepage, evaporation, methods of applying water, return flow to streams, duty of water for different crops and on different soils, effects of irrigation on the quantity and quality of yields, and drainage of irrigated soils.

The increase in the acreage irrigated and the wasteful methods of applying water have led to the water-logging and alkalinizing of much land in the irrigated sections, the acreage so affected being estimated at 1,000,000 or more.

A work of special interest and importance has been that carried on during the years 1911-1912 as a part of the investigations of the Conservation Commission created by the 1911 session of the California legislature. Data have been collected regarding the water supply, both surface and underground, which is available for irrigation; the extent, character and location of lands susceptible of and adapted to irrigation; and the present extent of irrigation in California. Maps and reports have been prepared for early publication setting forth the results of these investigations.

Meetings.—The twentieth National Irrigation Congress met at Salt Lake City, Sept. 28 to Oct. 3, with an attendance of representatives from foreign countries, the federal Government, the state governments, and

leading irrigated sections. A conference of the director and other officials of the Reclamation Service, immigration, passenger and traffic representatives of a number of the leading western railroads, and representatives of most of the states where irrigation is practiced, was held at Chicago, May 31 to June 1, with the purpose of perfecting plans to protect purchasers of irrigated lands and investors against unscrupulous real estate agents and promoters. It was recommended that a bureau of publicity be established under the Department of the Interior.

DRAINAGE

Area of Swamp Lands.—Increased interest in drainage has been evinced during 1912. Data regarding the rate at which reclamation by drainage is going on cannot be secured, however, owing to the fact that a large part of the swamp lands which passed into the possession of the states by the laws of 1850 and 1860 have since passed into the possession of private investors. The acreage of swamp and overflowed land in the United States is estimated at from 75,000,000 to 80,000,000 acres. The report of the National Conservation Commission gave the area of such lands in 1908 as approximately 74,541,700 acres. The following states each reported 1,000,000 acres or more: Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Minnesota, Mississippi, Missouri, North Carolina, South Carolina, Texas and Wisconsin. To the total area given above should be added an area estimated at approximately 150,000,000 acres, which is included in farms, but which would be benefited by drainage.

In a report to Congress of date April 30, 1908, the Department of Agriculture placed the acreage of swamp and overflowed lands at 79,005,023 acres, and divided this total into four classes, as follows:

Permanent swamp	52,665,020
Wet grazing land.....	6,826,019
Periodically overflowed.....	14,747,805
Periodically swampy.....	4,766,179

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It was estimated that by drainage the market value of these lands could be increased \$1,593,633,155, and their annual production increased \$273,079,295, the estimated increase in value above the cost of draining, cost of drainage, and increased annual yield being as follows:

KIND OF LAND	Increase in value per acre	Cost per acre of drainage	Increased yield per acre
Permanent swamp.....	\$20	\$17	\$3.00
Wet grazing.....	15	17	2.50
Periodically overflowed.....	20	12	6.00
Periodically swampy.....	30	13	2.00

Drainage of Irrigated Lands.—The soils of the greater part of the arid region contain alkali of different kinds. The natural drainage of many sections is poor, and in many cases the soils are underlain at comparatively shallow depths by impervious substrata. The rapid increase in the area irrigated, the excessive use of water, the wasting of water upon fields in order to retain water rights, and the rapid evaporation in arid climates have created a need for drainage in nearly all irrigated regions, either for the purpose of removing alkali or of lowering the plane of the ground water. During the past year a number of the larger irrigation enterprises have recognized this need, and have planned to install drainage systems for their lands. The amount of irrigated land needing drainage has been estimated as over 1,000,000 acres, or from 6 to 10 per cent. of the entire irrigated area.

Drainage of Swamp Lands.—The greatest activity in drainage during the past year has been in the lower Mississippi Valley, Florida, Georgia, North Carolina and South Carolina. A movement has been started to obtain the enactment of a new law in Mississippi to permit the inclusion of 1,150,000 acres in the upper Yazoo delta in one big drainage project.

The first of the large main canals being constructed by the state of Florida in its plan to reclaim the Everglades was opened during the year. A tract 160 miles long, 60

miles wide, and containing 4,000,000 acres is to be relieved of its surplus water by five main canals, which are to be constructed by the state. Lake Okeechobee is to be lowered during dry seasons in order to make it available for storage during wet seasons. Much of the land to be drained has been sold by the state to development companies, and is being sold by them in small tracts.

At the 1912 sessions of their legislatures, Maryland and Kentucky enacted Drainage and Levee District Acts, and Vermont reenacted and amended its district law of 1910.

National Drainage Association.—Interest in drainage has been aroused to such an extent that on Dec. 8, 1911, the National Drainage Association was organized at Chicago. The second session of this association was held at New Orleans April 10-13, 1912, at which resolutions were passed asking federal aid for drainage. Most of the land needing to be reclaimed by drainage lies upon interstate streams, and to be reclaimed properly must be handled as units, regardless of state lines. These conditions, the association maintains, necessitate the control of the reclamation works by the federal Government, rather than the states. It is also urged that the Government advance funds for this work, the right to control the works and to advance the funds, as suggested, being based upon the power of the federal Government to control navigation. (See also XIX, *Agriculture*.)

HIGHWAYS

ANDREW P. ANDERSON

The year 1912 has been especially notable for the large amount of new road construction. From such data as are at present available it is estimated that 12,000 miles of all classes of roads were improved with

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a hard surface. And yet, while the main interest seems to have been centered largely on new improvements, commendable progress has been made also in methods of administration, road finance and maintenance.

Federal Aid.—During the past ten years there has been an ever increasing demand for federal aid in road building. This was not asking an entirely new innovation, for during the early life of the Republic Congress took a great deal of interest in providing for adequate roads. Altogether about \$14,000,000 was appropriated by Congress in money and land grants during a period of about 30 years, but on May 25, 1838, Congress passed the last appropriation for the National Road. The idea became very general that the importance of the wagon road had given way to the railroad. This idea prevailed for more than 50 years, when changing traffic conditions began to call attention to the importance of our local roads. The automobile and auto-truck have created a new demand for main lines of communication between centers of population or places of amusement and recreation. An idea of the widespread interest in this matter may be gained from the fact that during the 1911-1912 session of Congress no less than 86 bills and resolutions were introduced for granting some form of federal aid in road building.

On Aug. 24, 1912, after a lapse of 74 years, Congress again decided to aid the several states and voted \$500,000 for the construction of experimental and rural delivery routes. This money is to be expended under the supervision of the Postmaster General and the Secretary of Agriculture. For each dollar contributed by the Government two must be contributed by the state or local community in order to secure this assistance. The plan is thus strictly one of federal aid or coöperation with the states in road improvement. No limitations were placed by Congress as to the location or distribution of these roads, except that they shall be such as are or will be used as rural delivery routes.

State Roads.—The work accomplished by some of the individual states, however, has been even more remarkable than the granting of federal aid. No less than nine states have engaged extensively in the construction of a system of state roads. These are New York, Pennsylvania, Massachusetts, Connecticut, California, Maryland, New Hampshire, Washington and Rhode Island. On the basis of funds available for 1912 it is estimated that over \$20,000,000 has been expended by these states during the past year for the construction and maintenance of their state highways.

New York easily leads with an expenditure of over \$5,000,000 for new construction and \$2,920,000 for maintenance of state roads. Pennsylvania at the last session of the legislature passed the so-called Sproul bill, whereby on June 1, 1912, about 8,000 miles of public roads were taken over to be constructed and maintained as a system of state roads. One million dollars was made immediately available for maintenance and repair. Another notable event in Pennsylvania was the decision reached by the State Highway Department that in the future construction as well as maintenance will be done largely by direct labor instead of by the contract system used in the past. (See also VI, *Amendments to State Constitutions.*)

State Aid.—Thirteen states—Alabama, Colorado, Louisiana, Maine, Michigan, Minnesota, Missouri, New Jersey, Ohio, Utah, Vermont, Virginia and Wisconsin—have perfected workable systems of state aid to counties or districts. Several of the states which are classed above as state-road states also grant state aid to counties or smaller subdivisions.

Convict Labor.—The use of prison labor in road construction has been considerably extended and perfected during the past year. Twelve states—Alabama, Colorado, Georgia, Louisiana, Nevada, New Mexico, North Carolina, Oregon, Utah, Virginia, Washington and Wyoming—have employed considerable numbers of state convicts in the construction of state roads, or more often in building county roads as a form of

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state aid granted to counties. The past year has demonstrated conclusively that convict labor can be successfully utilized in building good roads in almost all parts of the United States. The cost of prison labor in road construction has not exceeded from one-third to one-half the cost of free labor, while all of the above-mentioned states report it as being more beneficial to the prisoner than any other form of labor yet devised. The state of Illinois, and, to some extent, Minnesota and California, have not worked any prisoners in road building, but have utilized a portion of the prison labor at the penitentiary in preparing road metal, which is then supplied either free to the various counties, or sold to them at actual cost.

Road Finance.—Bond issues have continued to be a favorite method for raising the necessary funds for the improvement of county and township roads. Available data indicate that the funds raised in this manner during the past year will exceed \$40,000,000. During 1911 the county and township road improvement bonds voted amounted to a total of \$38,686,575.

There also has been a marked increase in the so-called "pay-as-you-go method" of road improvement. Counties, townships or special road districts have in hundreds of cases levied special taxes to increase their road revenues and improve their roads correspondingly. In general they are also making strenuous efforts to see that adequate returns are received for the money invested. This awakening activity has extended to all parts of the country. Many communities, however, are still practically wasting their road revenues because of lack of systematic, organized action.

Road Administration.—The past year has shown a very marked tendency toward the adoption of more business-like and scientific methods in all matters pertaining to road improvements. This is especially true in regard to road administration. Both states and counties are rapidly securing systematic, organized control of the administra-

tion of all road affairs. One of the most noticeable present effects of better administrative methods is on the terms of county and township road bonds voted during the past year. Formerly a large majority of county and township road bonds were issued for a term of from 25 to 50 years, or from three to five times the probable life of the road under modern traffic conditions. The majority of the bonds issued during the past year, however, were for periods, but little in excess of the probable life of the improvement. This is an economic reform of great value, and one which has been urgently advocated by our best highway authorities for many years.

Formerly little or no provision was made for skilled, businesslike supervision of the large sums often raised by bond issues. The location of the road system was largely the result of clever manipulation of local interests or political pull, while the proper maintenance of the road system after it was built was but rarely even thought of. During the past year we have seen a marked change for the better. A fairly large proportion of the roads built from bond issues were reasonably well located, the construction was satisfactory, both as regards the methods and materials, and in general some provision was made for maintenance.

Examples of excessive waste from defective organization are becoming less and less numerous. Striking instances are being more and more severely criticized and condemned by an observant public. During the past year many unwilling communities have been literally forced by this enlightened criticism into adopting a more businesslike administration of their road funds, together with more scientific methods of construction and maintenance.

Road Construction.—The sand-clay road has proved more popular than ever. It is safe to say that more roads have been surfaced with sand-clay during the past year than with all other materials combined, gravel alone excepted. As in past years, the larger portion of sand-clay construction has been confined to the southern states, though a large mile-

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age has been built in the middle and western states. Five years of successful trials with sand-clay construction have now fully demonstrated that this form of construction is well adapted to large sections of the western and northern states in addition to the South, where it was developed nearly 20 years ago. The average cost of the sand-clay roads built during the past year probably has not exceeded an average of \$750 per mile.

In general, the class of construction employed during the year has been very satisfactory. The great flood of "cure alls" which swept over the country following the advent of the automobile, has largely subsided. Rapid progress has been made toward the standardization of both materials and methods. The American Society for Testing Materials, the International Association for Testing Materials, the U. S. Office of Public Roads, and other organizations, have devoted considerable time and attention to this subject. Reliable and practical methods of testing road materials and determining their true value have been perfected by the Office of Public Roads, and given to the public.

The high and ever increasing cost of maintenance has led to a more general adoption of various methods and materials which, while generally of a higher first cost, are expected to effect a saving through lower cost of maintenance. The materials which have met with the greatest favor are bituminous binders for broken-stone roads, brick, and concrete. The bituminous binders have been largely confined to asphalts, asphaltic oils and tars. Satisfactory roads have been built with all of these materials. The question of which one to use is now largely one of local conditions and prices. In reviewing the bituminous construction of the past year, we find that the largest mileage was of asphaltic oil, while tar was second, and asphalt and asphaltic preparations third.

Brick blocks have been used more generally than ever before in the construction of roads expected to carry heavy, mixed traffic. The states showing the largest mileage of brick

construction are Ohio, Pennsylvania, and Illinois. Under ordinary conditions the cost of a brick road nine feet wide, on a concrete foundation, has averaged from \$10,000 to \$12,500 per mile, with an increase of \$1,000 per mile for each additional foot of width. Reliable data concerning the cost of maintenance of brick roads under different traffic conditions and covering a sufficient period of years to be of real value are as yet rare. Practically all reports of maintenance costs on well constructed brick roads during the past year are, however, extremely gratifying.

The construction of concrete roads, which was first carried out on a large scale during 1911, has more than doubled. Wayne County, Mich., which is the largest builder of this type of country road, altered its specifications slightly at the beginning of 1912. The mixture was changed from 1-2-4 to 1-1½-3, and the thickness of the finished roadway increased from six to seven inches.

Road Maintenance.—Road maintenance has continued to be the most pressing question during the past year, as it has been during the previous six or seven years. Automobile and auto-truck traffic is increasing by leaps and bounds. During the past year more than a half-million automobiles frequented our public roads. The peculiar flexibility of the automobile traffic and its prevailing tendency to shift its routes of main travel to the lines of least resistance often works great hardship on local communities. Only by a comprehensive study of large areas can this demand of the auto traffic for through routes be foreseen and adequately provided for. In this field the different state highway departments have done splendid service during the past year.

Dust prevention may be divided under two heads—laying the dust formed, and preventing its formation by more permanent methods of construction. For laying dust, large use has been made of surface applications of light asphaltic oils, tars, magnesium chloride solution, and a number of proprietary compounds. The progress during the past years

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has been largely confined to perfecting apparatus, machinery, and methods of application. Progress in permanent methods has already been discussed under construction.

The average cost of maintenance is very difficult to determine, because of the rapid increase in new construction and the absence of data covering exactly the same mileage for a number of years. The maintenance cost per mile per year varies with the age of the road. Hence, when, as is the case in practically all states at present, no effort is made to differentiate the construction according to age, but a general average for maintaining the whole mileage is reported, it is almost impossible to determine whether the change in the cost of maintenance is due to traffic, maintenance methods, or the influence of newly built roads added to the system.

In New York State the appropriation for the maintenance of 3,151 miles of state roads was \$2,919,959, or an average of \$926 per mile, as against \$1,001 per mile expended on the maintenance of 2,123 miles of road in 1910. Very few reliable data are at hand as to the actual expenditure for maintenance during 1912. Wherever automobile traffic is heavy, together with considerable amount of horse-drawn traffic, the maintenance cost of broken stone roads has averaged not less than \$400 per mile. In exceptional cases this amount has been exceeded 200 or even 300 per cent.

The state of Iowa has made

marked progress in the maintenance of her earth roads. For the first time in our history we find the importance of our earth roads fully recognized in a legislative enactment which makes the dragging of all county roads compulsory. Great improvement in the earth roads is reported from nearly all parts of the state.

New Developments in Construction.

—No striking new developments have appeared during the past year. Such as we find are rather the evolution of older methods and their adaptation to new conditions than new discoveries. During several years, efforts have been made to develop a road surface possessing all the good qualities of concrete without its objectionable quality, lack of resilience. This had led to some modifications of the concrete surface, two of which seem to give promise of future value. The first, discovered by L. W. Page, director of the Office of Public Roads, consists of adding mineral oil to the concrete, forming the so-called oil-mixed concrete, which is more resilient than ordinary concrete and is also moist proof. The second method consists of a cushion or wearing coat over the ordinary concrete pavement. This cushion coat is from 0.25 to 0.5 in. in thickness, and is composed of sand or very finely broken stone with a good bituminous binder. This gives a resilient surface to the unyielding concrete which can be readily renewed as often as traffic conditions may make it necessary.

WATERWAYS

E. N. JOHNSTON

Appropriations.—The River and Harbor Act of July 25, 1912, appropriated a total of \$31,059,370.50, and authorized the Secretary of War to enter into contracts for not to exceed \$2,200,000 additional. These funds were for use in prosecuting many different works of river and harbor improvement throughout the United States. The total amount appropriated for rivers and harbors to November, 1912, was \$735,473,149. The total amount actually expend-

ed by the federal Government for river and harbor improvement and maintenance during the year ending June 30, 1912, was \$35,643,918.

On Dec. 2 estimates aggregating \$56,766,992 for river and harbor work during the fiscal year 1914 were submitted to Congress.

Harbors: Atlantic Coast.—At Portland, Me., the work of restoration of 30-ft. depth in the most important part of the harbor has been commenced. The 35-ft. channel at

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entrance to Boston harbor has been completed except for some rock removal. Work was begun during the year upon the improvement of Pollock Rip channel near the entrance of Nantucket Sound to a depth of 30 ft., by dredging; this is an exposed ocean channel carrying a large commerce.

The new Ambrose Channel entrance to New York harbor was completed during the year to a depth of 40 ft. at low water, and width of from 1,850 to 2,000 ft. Its high-water depth is 44 ft. Formerly no vessels attempted to enter the harbor at night; now they enter at night, and even during heavy fogs. The work of removal of rock reefs in the East River and the vicinity of Hell Gate was continued during the year. Work has been begun upon the improvement of Jamaica Bay in the vicinity of New York, the improvement to be made by cooperation of the federal Government and the city of New York. This bay will ultimately have an entrance channel 30 ft. deep and 1,500 ft. wide.

There was originally available in the Delaware River channel below Philadelphia, a depth of only 17 ft. The channel is 63 miles long and has already been deepened so as to be now at least 30 ft. deep at low water. The work of further improvement to a 35 ft. depth is in progress. The entrance to Absecon Inlet, at Atlantic City, N. J., is to be deepened to 12 ft. under a project just adopted, and on which work has not yet been begun. A new project just adopted for Wilmington, Del., harbor contemplates that the channel in Christiana River, forming the harbor, shall be maintained by a new Government hydraulic dredge of the seagoing type.

During the year the work of deepening the entrance channel of Norfolk from 30 feet to 35 feet was continued. The 1912 River and Harbor Act adopted a project for a waterway 12 ft. in depth between Norfolk and Beaufort, N. C., via the inland route. In addition to improvements of existing natural waterways the project includes the purchase of the existing privately-owned Albemarle and Chesapeake Canal and its enlarge-

ment. This new waterway will form an important part of the proposed Atlantic Intra-Coastal Waterway.

Work will soon be begun upon construction of a harbor of refuge at Cape Lookout, N. C. This includes the construction of a breakwater, and will cost \$3,526,600. Below Wilmington on Cape Fear River, N. C., the channel has been deepened from about 7 ft. to 26 ft. The channel will now be considerably widened. The present project for Charleston harbor is for an entrance channel 28 ft. deep. This depth has been obtained and further widening of the channel is in progress. The original depth was 12 ft. At the mouth of Savannah River work is in progress with a view to obtaining a depth of 20 ft. in the channel to Savannah by dike construction and dredging. A depth of 24 ft. at low-water (30.4 ft. at high water), has already been obtained. Progress upon the new 30-ft. project for St. John's River, Fla., up to the city of Jacksonville, included dike construction, rock removal, and dredging.

Gulf Coast.—The channel in Hillsboro Bay to Tampa, Fla., was originally about 4 ft. deep. A main channel now 24 ft. deep has been obtained to Tampa. Additional work remains to be done in auxiliary channels which are to have the same depth.

The channel in Mobile Bay is 33 miles long to the city of Mobile. Originally only 8 ft. deep, it has been given by dredging an available depth of 22 ft. The work of obtaining a depth of 27 ft. is well advanced toward completion, that depth being available over part of the length of the channel.

The Southwest Pass, the largest of the outlets of the Mississippi River has now a channel depth of 31 ft., having been deepened from 9 ft. since 1902. The channel across the bar is protected by jetties several miles long. More than 3,300,000 cu. yd. were dredged from this channel during the year. When completed it will be 35 ft. deep and 1,000 ft. wide.

The depth available at the entrance to Galveston Bay during the year was 33 ft., previous operations

of jetty construction and dredging having increased the depth from 9 ft. This improvement has been of immense value to the entire southwest, Galveston now ranking second to New York in value of foreign exports.

The past year has witnessed the opening to ocean commerce of a new harbor on the coast of Texas, made available by the practical completion of the improvement of Aransas Pass, at the entrance to Corpus Christi Bay. The depth was originally about 8 ft.; it is now 20 ft. Jetties protect the channel and confine the currents so as to improve it.

During the year work of deepening the Sabine-Neches Canal to 25 ft. and improving the Sabine and Neches Rivers to Orange and Beaumont, Texas, to the same depth, was begun. This canal runs from those rivers near the shore of Sabine Lake to Port Arthur, which is connected by a canal 25 ft. deep, with deep water obtained by jetty improvement, and dredging at Sabine Pass. This latter canal is soon to be deepened to 26 ft.

Pacific Coast.—Los Angeles now possesses a good artificial outer harbor, protected by a breakwater about 2 miles long, and an inner harbor consisting of dredged basins and channels, having a maximum depth of 30 ft. Already over 3 miles of wharf frontage is available for vessels of 30-ft. draft. Originally the available depth was only 2 ft.

Congress in 1912 authorized the construction of a breakwater to shelter the harbor of Monterey, Cal. The work of raising the jetties at the entrance to Humboldt Bay, Cal., was in progress during the year.

Contract was entered into during the year for construction of 2 new dredging plants to be used in deepening the channel in the Columbia and Willamette Rivers up to Portland from the present depth of 24 ft. to 30 ft., the original depth having been about 14 ft.

At the mouth of the Columbia River there is in progress the most extensive and difficult jetty improvement ever undertaken. The south jetty has been built to a length of

about 7 miles out into the Pacific Ocean, the depth in places being as much as 65 ft. The construction of the north jetty will soon be commenced. The work already done has provided a depth over the bar of 26 ft., an increase of about 9 ft. It is expected to obtain eventually a depth of 40 ft.

The improvement of the outer harbor at Chicago by breakwater extension and construction was authorized during the year by Congress.

River Improvement.—At the falls of the St. Mary's River, which is the outlet of Lake Superior, three locks already exist, two on the United States side, and one on the Canadian side. Substantial progress was made during the year upon the construction of a third lock upon the American side, and Congress authorized the construction of a fourth lock.

The improvement of the Ohio River between Pittsburgh and the mouth, by construction of 54 locks and dams, is in active progress, 11 of the dams having been completed. These dams will provide a depth of at least 9 ft. during the entire year; whereas, at present the river is entirely unnavigable during portions of each year.

A lock and dam in the Hudson River at Troy has just been commenced. This will replace an old dam and small lock, and will greatly improve the eastern approach to the New York State barge canal.

Locks and dams have also been under construction during the year upon the Cumberland River below Nashville, the Black Warrior, and Tombigbee Rivers, the Brazos and Trinity Rivers, the Cape Fear, Kentucky, and Coosa Rivers.

Congress has just adopted a project for comprehensive improvement of the Missouri River below Kansas City, which includes dike construction and bank protection, estimated to cost \$20,000,000, and ordered by Congress to be prosecuted so as to be completed in ten years.

Mississippi River Floods.—During the spring of 1912 there occurred the greatest flood of record on the Mississippi River below Cairo, caused by a coincidence of only moderately

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high water in its principal tributaries. The estimated damage to property by this flood was \$43,000,000. There have been built by the United States and local interests 1,466 miles of levees to protect the lands contiguous to the river, the protected area being over 26,500 square miles. Twelve crevasses occurred in the levees during the 1912 flood, the resultant loss of levee being only 1.77 per cent. of the total levee contents. The levees withstood the flood surprisingly well. The levees have been

built to such heights as available funds permit, but to bring them up to the grade deemed necessary will require the placing of one-fifth as much material as has been placed heretofore. Larger appropriations will be required than have been available in the past, if the required protection is to be provided more rapidly. For the levee and other work on the Mississippi River below the mouth of the Ohio, Congress provided the sum of \$6,650,000 during the year.

THE PANAMA CANAL

FRANCIS G. WICKWARE

Appropriations.—The total appropriations made by Congress up to June 30, 1912, amounted to \$293,561,468.58. By an act approved Aug. 24, 1912, additional appropriations were made for the fiscal year 1913, amounting to \$28,980,000, exclusive of fortifications. On June 30, 1912, \$259,653,236.74, or about 69 per cent. of the total estimated cost of \$375,701,000, had been charged into the work, \$34,183,183.48 of which was expended during the last fiscal year. The estimate for the fiscal year 1914, submitted to Congress Dec. 2, is \$30,174,432.

Status of the Work.—The total amount of excavation required for the entire work is now estimated at 211,351,000 cu. yd. According to the Annual Report of the Isthmian Canal Commission, which appeared in November, excavation to June 30, 1912, totaled 173,269,815 cu. yd., 30,302,261 cu. yd. of which was removed during the fiscal year 1912. During the first four months of the current fiscal year, an additional 9,738,882 cu. yd. was removed. On Nov. 1, therefore, 183,008,697 cu. yd. has been excavated, and the amount of material still to be excavated was 28,342,303 cu. yd.

The concrete work required for the complete canal is estimated at approximately 4,560,000 cu. yd. To June 30, 2,953,902 cu. yd. had been placed, of which 1,443,570 cu. yd. was placed during the fiscal year. During the first four months of the current year, 297,061 cu. yd. of

the concrete was placed. On Nov. 1, therefore, the concrete work was about 71 per cent. completed.

By far the largest item of structural-steel work is the 46 lock gates, in the construction of which, approximately 58,000 tons of material will be employed. On June 30, 1912, none of the gates was completed, but work was in progress on 23 gates at Gatun and Pedro Miguel. The total steel in place at the end of the fiscal year, nearly all placed during the year, was 19,631 tons. During August, work was begun at Miraflores.

Contracts aggregating \$3,683,306.29 were entered into during the fiscal year for electric locomotives, tracks, machines, pumps, electrical equipment, and all other appliances necessary for the operation of the locks, with a few minor exceptions.

The official date of opening the canal is still Jan. 1, 1915. It is confidently expected, however, that the first ship will pass through the canal before the end of 1913. Col. Goethals reports that Culebra Cut will be completed by July 1, 1913, unless unexpectedly heavy slides occur. The Gatun Locks and Dam will be completed by the same date, and the spillway a month later. The locks and dams in the Pacific division will be completed by Jan. 1, 1913. The spillway at Miraflores will be completed by June 30, 1913, and the excavation of the channel below Miraflores by the same date.

Construction: Atlantic Division.—The work of this division includes

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the construction of the locks and dams at Gatun, the excavation between the locks and deep water in the Caribbean, and the breakwater in Limon Bay. Excavation at the Gatun Locks during the fiscal year totaled 883,918 cu. yd. of soft material, handled by suction dredges, leaving 89,570 cu. yd. to be removed. The total amount of masonry laid during the fiscal year was 451,025 cu. yd. Early in the current fiscal year it was found necessary to increase the total estimate to 2,050,000 cu. yd.; at the close of work on Nov. 30, the concrete work was over 93 per cent. completed, with a total of 1,907,074 cu. yd.; the amounts of dry and hydraulic fill placed during the fiscal year were, respectively, 2,544,526 and 2,543,086 cu. yd., making the totals, respectively, 9,863,901 and 9,955,078 cu. yd. During the first four months of the current fiscal year, 753,367 cu. yd. of dry fill, and 169,004 cu. yd. of hydraulic fill were added to the dam. Satisfactory progress was made also on the spillway, in which 58,666 cu. yd. of concrete was placed during the fiscal year. During the first four months of the current fiscal year, 5,285 cu. yd. were added and the concrete work was 92.31 per cent. completed on Oct. 31.

Excavation from the canal prism during the fiscal year, comprised 424,872 cu. yd. in the dry, which completed the cut through the Mindi Hills, and 4,870,827 cu. yd. of dredged material. On account of silting of the channel, however, the net amount removed by dredging was only 1,319,040 cu. yd.

Central Division.—In the Chagres district of this division, the work of which includes all the excavation between the Gatun Dam and Pedro Miguel Locks, 560,509 cu. yd. of material was removed from the canal prism during the fiscal year, leaving about 300,000 cu. yd. of wet excavation still remaining. In Culebra Cut excavation during the fiscal year totaled 16,476,769 cu. yd. From estimates prepared July 1, 1912, 11,863,540 cu. yd. of dry excavation remained to be removed to complete this section. During the first four months of the current fis-

cal year, this amount was reduced by 4,485,401 cu. yd., leaving the Culebra Cut 93.19 per cent. completed on Oct. 31.

The estimate of material remaining on July 1, 1912, was increased over that of the previous year by 3,595,000 cu. yd., to provide for necessary excavation outside the slope lines and because of slides. As the cut has been deepened, slides and breaks in the banks have become more extensive and troublesome. The total amount of material removed because of slides to the close of the fiscal year was 16,671,000 cu. yd. Excavation outside the slope lines and because of slides during the fiscal year aggregated 5,915,000 cu. yd., 35.9 per cent. of the excavation of the year, as compared with 30.07 per cent. in the year 1910-11. The two largest slides in motion at the close of the fiscal year, on the east and west sides of the cut at Culebra, covered areas, respectively, of 63 and 50.7 acres. From these slides 11,055,000 cu. yd. of material has been removed, 4,670,000 cu. yd. during the fiscal year. No effective treatment for slides once developed has been discovered, but they may be prevented by decreasing the pressure on the banks where breaks are likely to occur. Terracing of the banks for this purpose was continued throughout the year. A special report on the geology of Culebra Cut, published during the year, disposes of apprehension that slides are likely to endanger the operation of the completed canal.

Pacific Division.—The work of this division includes the locks and dams at Pedro Miguel and Miraflores, and the excavation of the channel between the locks and below Miraflores Locks to deep water in the Pacific. Excavation for the Pedro Miguel Locks was practically completed at the end of the previous year. The concrete laid in the locks amounted to 182,870 cu. yd., bringing the total to 847,926 cu. yd., and leaving 55,074 cu. yd. to be placed. At the close of work on Nov. 23, the lock was over 98 per cent. completed, with only 9,024 cu. yd. of concrete to be placed. To the west dam,

321,589 cu. yd. of material was added, leaving the dam 87 per cent. completed on July 1, 1912. Additions during the first four months of the current fiscal year totaled 58,513 cu. yd.

At Miraflores, 624,747 cu. yd. of material was excavated from the lock site during the fiscal year, exclusive of 165,145 cu. yd. removed in preparing the foundations. The amount of concrete placed in the locks was 751,540 cu. yd., leaving 386,729 cu. yd. to be placed July 1, 1912. At the close of work on Nov. 2, this amount had been reduced by 187,586 cu. yd., and the locks were over 91 per cent. completed. The 625,048 cu. yd. of hydraulic fill in the west dam at Miraflores was completed Dec. 4, 1911, by the addition of 78,316 cu. yd. Of dry fill 425,125 cu. yd. was placed during the fiscal year. The dam was 87 per cent. completed on July 1, 1912. Additions during the first four months of the current fiscal year totaled 158,195 cu. yd.

Steam-shovel excavation of the canal prism in the Pacific division totaled 864,475 cu. yd. during the fiscal year. From the sea-level channel south of Miraflores 900,596 cu. yd. was removed by the hydraulic excavation plant, and 3,884,287 cu. yd. by dredges. The last item includes 1,044,203 cu. yd. excavated to maintain the channel. There remained to be removed, at the close of the fiscal year, allowing 700,000 cu. yd. for silting, a total of 4,194,059 cu. yd. The total excavation in this division during the first four months of the current fiscal year was 742,939 cu. yd.

Labor.—The number of employees of the Isthmian Canal Commission and the Panama Railroad fluctuated during the fiscal year between 32,690 on July 1, 1911, and 34,957 on June 30, 1912. The average number of American employees was 5,101. Immigration to the Isthmus continued to decrease, the excess of arrivals over departures amounting to only 3,510, compared with 4,910 in 1910-11 and 21,114 in 1909-10.

Fortifications.—An act approved March 4, 1911, appropriated \$3,000,000 for the construction of gun and

mortar batteries for the defense of the canal against naval attack. A special division established in the chief engineer's office has charge of the actual execution of the work according to plans furnished by the War Department. Work was begun Aug. 7, 1911, and continued throughout the year. (See also XII, *The Army*.)

Terminals.—Plans were completed during the year for the terminals at the Atlantic and Pacific entrances to the canal, which are to provide, in addition to wharf and pier accommodations sufficient to meet all immediate requirements, all necessary facilities for docking and repairing all classes of ships and for furnishing them with fuel, fresh water, and supplies of all kinds.

The docks on the Atlantic side are to be protected against storms by a breakwater extending out in prolongation of the line separating the Canal Zone from Colon. They are to be 1,000 cu. ft. long, 209 ft. wide, and 300 ft. apart. On the Pacific side, the piers will be located at right angles to the axis of the canal, their ends 2,650 ft. from the center of the canal channel. They will be nine feet narrower than those on the Atlantic side, but otherwise identical. The piers are to be covered, except for a margin of about 18 ft., by fireproof steel sheds, and will be provided with the best appliances available for the economical handling and storing of freight.

The dry-dock accommodations will include, on the Pacific side, one dry-dock 1,000 ft. long, 110 ft. wide at the entrance, and 35 ft. deep over the keel blocks at mean sea-level, capable of accommodating the largest ship that can pass through the canal locks, and an auxiliary dock for smaller classes of vessels, 350 ft. long, 71 ft. wide at the entrance, and 13½ ft. deep over the keel blocks at mean tide. On the Atlantic side, the present dry dock at Cristobal, 300 ft. long, 50 ft. wide at the entrance, and 13 ft. deep over the sill at mean sea-level, will be retained.

Coaling plants will be provided at Cristobal and Balboa. The plant on the Atlantic side will be capable of handling and storing 200,000 tons of

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coal, with a possible increase of 50 per cent.; the plant on the Pacific side will have half this capacity. Storage will be provided at each terminal for 80,000 bbl. of fuel oil.

Electric power for operating the canal will be generated at a hydroelectric plant located below the spillway in Gatun Dam, now under construction. The generating equipment will comprise three 2,250 kw. turbines, driving 2,000 kw. generators. The average head throughout the year will be approximately 75 ft. The installation of 6,000 kw. in generating capacity, including reserve, is warranted by the amount of water available from the storage in Gatun Lake, upon which it will be necessary to draw during the dry season. The maximum quantity of water diverted for hydroelectric development is approximately 7 per cent. of the minimum water supply, and is the excess which is not required to replace lockage, evaporation and leakage losses.

The Panama Canal Act.—An Act "to provide for the opening, maintenance, protection, and operation of the Panama Canal, and for the sanitation and government of the Canal Zone" (H. R. 21969) was one of the important pieces of legislation of the second session of the Sixty-second Congress. The bill as reported to the House by the Committee on Interstate and Foreign Commerce, sanctioned the dismissal of the Isthmian Canal Commission on the completion of the canal; authorized the President to appoint a governor of the Canal and Canal Zone, to serve four years, at an annual salary of \$10,000, to name all other persons necessary to the maintenance and operation of the canal, and to establish tolls; and provided for the administration of justice by one district judge, through the jury system except in cases of equity and admiralty, with appeal to the New Orleans Circuit Court of Appeals, and then to the Supreme Court. The bill stipulated that in the matter of tolls no preference should be shown to the vessels of any nation, and prescribed the same rate of toll, not to exceed \$1.25 per ton, for all vessels using the canal, with the ex-

ception of vessels of the Governments of the United States and Panama, to which free access was reserved. The most important provision prohibited any railroad company or other common carrier from holding stock in or controlling by lease or otherwise any steamship line with which it does or may compete for traffic; this provision was an extension in committee of a clause in the original draft forbidding the use of the canal to any vessel owned or controlled by a railroad, corporation, or individual, with intent to restrain or prevent competition among water carriers or between water and rail carriers. Another provision required a railroad operating with a water carrier from a foreign country to provide joint through rates upon the request of any water carrier engaged in the domestic trade of the United States.

The bill passed the House of Representatives May 23. The most important amendment, which gave rise to an international controversy (See III, *International Relations*), granted free use of the canal to vessels engaged in the coastwise trade of the United States; otherwise the provisions regarding tolls were retained. In the Senate an amendment, proposing the elimination of the clauses exempting American vessels from tolls, was defeated by a vote of 44 to 11; the bill passed the Senate Aug. 9, by a vote of 47 to 15, with the privileges granted to coastwise shipping *exclusively* confirmed, and exemption from tolls granted also to vessels of American registry engaged in the foreign trade, whose owners agree to surrender them to the United States in time of war or other emergency, at a fair valuation. A new clause added in the Senate admitted to American registry foreign-built ships engaged only in the foreign trade, and of exclusively American ownership, but provided that they should not be eligible for mail contracts unless constructed with a view to conversion into auxiliary naval cruisers. In the last hours of debate the Senate restored to the bill provisions, omitted by the Senate Committee on Interoc-

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railroads from owning ships operating through the canal, prohibiting vessels owned by "illegal" industrial combinations from using the canal, and requiring all railroads to dispossess of any steamship lines owned by them which, if independent, would compete with the railroads.

The bill finally adopted in conference, passed by the Senate Aug. 16, and by the House Aug. 17, and approved by the President on Aug. 24, retained the exemption of American coastwise vessels from payment of tolls but abandoned the extension of the privilege to American vessels in the foreign trade; restored the House provision prohibiting ownership by a railroad after July 1, 1914, of any steamship line with which it does or may compete for traffic, but modified it to permit the Interstate Commerce Commission to extend the time limit in the case of any railroad-owned steamship line operating a beneficial service which subjects its rates, facilities, etc., to the control of the Commission; prohibited the use of the canal to any vessel owned or controlled by corporations violating the Sherman Antitrust Act; retained the clause admitting foreign-built ships to American register; and provided for free entry into the United States of materials for the construction and repair of ships. (See also XIII, *Economic Conditions and the Conduct of Business*; and XXII, *Trade, Transportation, and Communication*.)

Traffic and Tolls.—Two elaborate reports, prepared by Emory R. Johnson, on "Panama Canal Traffic and Tolls" (Sen. Doc. 575, 62nd Cong., 2nd Sess.) and the "Relation of the Panama Canal to the Traffic and Rates of American Railroads" (Sen. Doc. 875, 62nd Cong., 2nd Sess.), were presented to President Taft Aug. 7. The first has five divisions; a detailed statement of the savings in distance and time of the Panama Canal route over other routes between the principal ports of the world; a study of world freight movements, introducing an elaborate analysis of the tonnage of vessels which might have advantageously used the canal during 1909-10; a survey of the growth of available

traffic, 1899 to 1914-15; a study of the relation of tolls to the volume of traffic through the canal, with recommendations summarized below; and an examination of coaling facilities and coal costs via the Panama Canal and alternative routes.

Prof. Johnson, whose report, it must be remembered, was presented prior to the passage of the Panama Canal Act, recommended that the same rate of toll be charged on American as on foreign vessels, for the following reasons:

(a) The omission or repayment of tolls on American shipping would be of assistance mainly to our coastwise shipping which does not need aid and would be of but little help to American vessels engaged in the foreign trade.

(b) Such subsidies as are given the American merchant marine should be paid to vessels employed in our foreign trade; but the remission or repayment to vessel owners of Panama tolls on American ships in the foreign trade would be an ineffective subsidy that might invite retaliatory measures by foreign governments.

(c) The exemption of coastwise shipping from Panama tolls would inure mainly to the benefit of the coastwise carriers and only partially to the benefit of shippers and consumers. Neither the rates of the steamship lines nor the charges of the rail carriers will be appreciably higher if tolls are charged on coastwise shipping than they will be if such shipping is relieved from the payment of tolls.

The rate recommended by Prof. Johnson was \$1.20 per net ton for loaded merchant vessels, with a reduction of 40 per cent. in the case of vessels in ballast. This rate was established by proclamation of the President, Nov. 13; on naval transports, colliers, hospital ships, and supply ships, the same rate was fixed; all other naval vessels using the canal will be charged \$0.50 per displacement ton.

To quote from Prof. Johnson's estimate of traffic and revenue:

The shipping using the Panama Canal may be subdivided into three classes—that engaged in the coastwise commerce between the two seaboard of the United States, American shipping employed in carrying the foreign commerce of the United States, and foreign shipping carrying commerce of the United States and foreign countries. The following

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table states the probable volume of each of these three classes of shipping during the first two years of the operation of the canal, during 1920 and during 1925:

	Average per annum during 1915 and 1916	1920	1925
Coast-to-coast American shipping.....	1,000,000	1,414,000	2,000,000
American shipping carrying foreign commerce of the United States.....	720,000	910,000	1,150,000
Foreign shipping carrying commerce of the United States and foreign countries.....	8,780,000	11,020,000	13,850,000
Total.....	10,500,000	13,344,000	17,000,000

The gross revenue that may be secured from the Panama Canal, with tolls at \$1.20 per net ton upon all merchant vessels, is stated in the following table:

	Average per annum during 1915 and 1916	1920	1925
Coast-to-coast American shipping.....	\$1,200,000	\$1,696,800	\$2,400,000
American shipping carrying foreign commerce of the United States ¹	864,000	1,092,000	1,380,000
Foreign shipping carrying commerce of the United States and foreign countries.....	10,536,000	13,224,000	16,620,000
Total.....	\$12,600,000	\$16,012,800	\$20,400,000

¹ As coastwise shipping will bear no tolls, this item must now be omitted.

It has been estimated by the Isthmian Canal Commission that the annual expenses . . . for the operation and maintenance of the canal and the sanitation and government of the zone will amount to \$4,000,000. The canal will cost \$875,000,000. . . . The interest on this sum at 8 per cent. per annum will amount to \$11,250,000. The canal concession treaty between Panama and the United States requires the United States, beginning in 1913, to pay \$250,000 annually to Panama. Thus the total annual expenses . . . will be \$15,500,000.

Suez Canal.—Prof. Johnson points out that the Panama Canal will compete with the Suez Canal route for the commerce of the eastern seaboard of the United States, and of the Atlantic-North Sea ports of Europe with the Orient east of Singapore; fuel expenses will be lower *via* Panama, and with equality of tolls, the Panama route should readily secure the traffic. On the other hand, the Panama Canal could not hope to attract from the Suez route any considerable portion of the tonnage between Europe and the Pacific seaboard of Asia without reducing tolls below a point offering reasonable as-

urance of commercial self-support. This was one of the principal reasons for fixing Panama tolls at \$1.20 per net ton, on an equality with the new Suez rates which go into force Jan. 1, 1913.

According to the report of the Egyptian Government on the operation of the Suez Canal during the calendar year 1911, the total number of ships passing through the canal was 4,969, with a net registered tonnage of 18,324,794 tons, representing increases over 1910 of 436 vessels and 1,742,896 tons. Of these ships, 4,858 were mercantile vessels, with a net registered tonnage of 14,904,475 tons. The total receipts of the Suez Canal Company in 1911 amounted to \$27,607,645, an increase of \$866,802 over 1910. The total expenditure amounted to \$6,634,238. The directors of the company, at a meeting held in Paris, June 3, decided to continue the reduction of tolls which has been in progress since 1910. The successive rates per net ton have been: 1910, \$1.50; 1911, \$1.40; 1912, \$1.30. On Jan. 1, 1913, a new rate of \$1.20 goes into effect.

DOCKS, WHARVES, AND WATERFRONTS

CALVIN TOMKINS

Administration.—The basic principle of modern seaport organization is to tie together the more important sections of the port, and ultimately the port as a whole, by marginal terminal railroads, the circulation of traffic over which, in the rear of the docks, shall be as public and unobstructed as is the marine circulation of traffic in front of them. In short, port development is little more than railroad terminal reorganization and the creation of a marginal railroad system at the waterfront which shall make all parts of a port accessible to all railroads. Spur connections to sidings at factories supply the additional factor necessary for industrial use. Each part of the port should be planned for the uses to which it is naturally best adapted.

The approaching completion of the Panama Canal has done much to stimulate appreciation of these principles by the various seacoast municipalities of the country, all of which are planning improvements, appropriations of money and a modification of laws to secure better harbor facilities. This awakening of public spirit is largely stimulated by the activities of the various chambers of commerce throughout the country.

New York.—At New York, the dock receipts constitute a very important part of the municipal revenues. For years they have been turned into the general treasury and used for general city purposes, to the neglect of waterfront terminal developments. So far has this proceeded that the Dock Department is the only great department of the city government which has not been provided for with adequate funds to meet the growing necessities of the port for the past ten years. As a consequence other better-equipped ports are diverting trade from New York, and a crisis has arisen in the affairs of the port which is attracting the attention of the entire country.

Boston, under a state commission, has created the Directors of the Port of Boston, and furnished them with

an appropriation of \$9,000,000. The Directors are appointed by the governor to serve interlocking terms of three years each. They have developed a general plan for port development; have done much to cheapen exchanges between railroad terminals, coincidentally providing for better service, and have recently arranged to terminate the remunerative lease of the Commonwealth Pier (\$70,000 annually) to the New Haven Railroad and transfer it for a nominal consideration to the Hamburg-American Line, the largest steamship line in the world. Railroad trains, both passenger and freight, can be brought down to this pier, and undoubtedly the commerce of the city will be greatly aided by the changes contemplated. The commerce of Boston is for the most part handled through several well-equipped railroad waterfront terminals. A modern installation for the mechanical and cheap handling of grain is located at East Boston, which compares favorably with the grain-handling apparatus at Montreal, Baltimore and Philadelphia.

Rhode Island has recently appointed a Harbor Commission, which is giving attention to the importance of the ports of Providence and Pawtucket. The act appointing the board is specific as to property to be acquired and improvements to be made within certain time limits. This imposes upon Rhode Island a positive port plan.

Connecticut has appointed a commission, which has made available an appropriation of \$1,000,000 for the port of New London. This port affords a well protected harbor, with deep water, although the shores are for the most part lined with bluffs and a fine residential settlement is characteristic of the locality. New London is connected with the Grand Trunk Railway System of Canada, and expects a development of trans-continental business.

Philadelphia.—At Philadelphia, the control of the municipality is departmental, under the city, the har-

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bor administration being under the Department of Wharves, Docks and Ferries, headed by a single director. The waterfront of Philadelphia is largely under railroad control, the city owning nine piers of various sizes with some bulkhead frontage at the ends of streets, seldom practicable for wharfrage purposes. These wharves are under leases from one to ten years. The present director, George W. Norris, proposes to institute what are termed "preferential berths," the lessee to be given preference, but no exclusive privileges will be granted; the available space, not actually occupied, may be designated by the Department for transient purposes. A belt line for the interchange of railroad freight among all the roads is in existence, and the control of this line for 4.6 miles is vested in the Philadelphia Board of Trade and the Commercial Exchange, with a proviso that its use is open to all roads on equal terms. The belt line possesses no equipment of its own. It only provides tracks over which the various railroads operate rolling stock at a uniform rate. The cost of these transfers is absorbed by the railroads in the rates for through traffic. Comprehensive plans have been presented for the extension of municipal control and development. In all these, the present belt line is made the nucleus for a greater marginal railway. Financial limitations are delaying the development of port facilities at Philadelphia.

Baltimore.—The fire at Baltimore in 1904 destroyed many wharves and private holdings at the upper end of the harbor and afforded an opportunity for waterfront reorganization. In that year, \$6,000,000 of "Burnt District Bonds" were issued for docks, street widenings and other municipal improvements. Sufficient waterfront property was acquired for the construction of eight large, solidly filled docks. The President of the Harbor Board is now advocating a belt-line railroad and a clause in leases insuring the municipality the right to use piers when not actually occupied.

Savannah, second in exports among the Atlantic ports, has been de-

veloped entirely by private enterprise. Its large commerce is admirably served by a number of important railroad terminals, which form a comprehensive system of harbor development, served by a channel that admits vessels drawing 30 ft. of water. Municipal ownership of docks has recently become prominent in public discussion and the trade bodies, city government and citizens generally seem thoroughly alive to the importance of the port's development.

Norfolk has recently appointed a Harbor Commission of seven members, whose attention is being directed to the completion of a publicly controlled belt line around the port.

Mobile.—In 1911 the City of Mobile, Ala., adopted a commission form of government. The harbor control of the city is vested in one of the commissioners. Like New Orleans, its docks are in reality levees or quays, with a few slips and basins. Waterfront development up to the present time is principally private, by the railroads. The city owns and controls about 1,500 ft. of waterfront between the two large railroad terminals. This has been developed as a quay on which has been erected a modern steel shed 1,240 ft. in length and 115 ft. in width; the channel is now being deepened from 23 to 27 ft.

New Orleans controls and operates its waterfront terminals under the French Code. It is incorporated into the laws of the state. It was provided that title to riparian lands along the Mississippi is inalienably vested in the state. Whenever the state authorities desire to take possession of waterfront property, compensation is paid only for improvements made by private occupants, not for the property value of the land. Prior to May, 1901, the public waterfront of the port was administered by an operating company under lease. At present control has passed into the hands of the Board of Commissioners of the Port of New Orleans. Contrast between these two forms of administration is marked: "In place of inefficient and insufficient facilities supplied by private lessees, the Harbor Board are now lin-

ing the river front with five miles of magnificent wharves, of which approximately 75 per cent. have steel sheds of the most modern and approved construction. The charges for public administration of these facilities have been cut practically in two." This board is a state body, appointed by the governor, and consists of five members, who serve overlapping terms of five years each. The belt-line railroad is under the control of the Municipal Commission, created in 1904. Before the creation of this commission, the waterfront was divided into five parts and operated by several railroad trunk lines, each line charging arbitrarily for switching over its lines for delivery to other lines and to the public wharves. The accumulated switching charges frequently amounted to \$12 or \$15 per car. There were few industrial sidings. The belt line now serves all the public wharves and connects all the railroads with each other and affords interchange of business between industries and between the different railroads. Cars are transferred at the flat rate of \$2 per car from any point on the line of the road. At present there are 18 miles of track and 12 miles of switches. The commission directly operates the road. Notable advances in freight-handling machinery are also to be noted at New Orleans.

Galveston.—The port of Galveston is virtually a railroad port. Its terminals are not publicly operated, but an admirable private railroad service exists.

San Francisco has always owned and controlled and now operates the marginal road on the waterfront and the docks in addition. The marginal road is an open highway over which cars of the various roads are switched by the engines of the belt line at a fixed charge. The system is not quite completed, being divided into two sections—northern and southern—but plans are under way for joining these sections. Before long the belt-line service will have been completed. A comprehensive physical plan for the waterfront exists, which is gradually being carried out. This port is the assembly point for a large part

of the trans-Pacific commerce. Both to the north and to the south are newer ports alive to opportunities and also prepared to take their share of the commerce of the Pacific coast.

Los Angeles.—The city of Los Angeles has secured a strip of territory between it and the sea where it is developing a port some 20 miles distant. The city has pledged itself to an expenditure of ten million dollars; \$3,000,000 of indebtedness has already been incurred for the construction of piers, terminal facilities, and dredging, to make the harbor available. A municipal railroad some 22 miles in length between Los Angeles and San Diego has been projected for the near future.

San Diego enjoys a fine land-locked harbor, but has been unfortunate in its railroad connections. The railroad grades back of the city interfere with cheap communication with the coast. The commission form of government prevails and harbor development, for which an appropriation of \$1,000,000 has been secured, is therefore an adjunct of the city government. The city is located on a branch of the Santa Fe road and freight must move through the rival port of Los Angeles. An attempt is being made to secure direct connections with the Southern Pacific and the Santa Fe by the construction of a direct line to Yuma.

Portland.—Under laws granting wide powers, the state of Oregon lately created the Commission of the Public Docks of Portland. This is supplementary to an efficient local commission, which has done much to render the Columbia River navigable for large ships. An appropriation of \$2,500,000 has been made and plans have been prepared and adopted, sufficient to insure to Portland an efficient, publicly controlled terminal.

Seattle.—In February, 1912, the Port of Seattle Commission, submitted to the electorate a report embodying a comprehensive scheme for the improvement, under municipal control, of certain sections of the harbor. An appropriation of \$6,000,000 has been authorized for carrying out the plans.

XI. PUBLIC SERVICES

RICHARD C. HARRISON

CORPORATIONS AND FRANCHISES

Duration of Franchises.—The most important franchise problem in American cities to-day is the tenure by which corporations shall be allowed to hold franchise grants. It is seriously complicated by the almost uniformly unfortunate terms of grants which are already outstanding and upon which many of the new franchises must be grafted. We have reached a stage of political and social development when it is practically impossible to find any except the direct beneficiaries who favor perpetual franchises, and yet until very recent years this was almost the only form in which such grants were made. The result is that there are outstanding a number of perpetual franchises which not only constitute in themselves a heavy burden on the public streets, but which in addition make it exceedingly difficult for our cities to work out any consistent scientific franchise policy. The experience of New York City in 1912 furnishes a striking illustration of the difficulties to be overcome. The New York and Queens County Railway Co. has, for a number of years, operated a trolley line between the Flushing and College Point sections of the city. It is held by the company by virtue of a perpetual franchise. The present New York City charter forbids grants for a longer period than 25 years, with a renewal privilege of 25 years. During the year the company applied for a franchise to allow the double tracking of a portion of the line. The practical absurdity of a limited grant for a few thousand feet of track in the middle of a perpetual franchise is apparent, and yet there is no way in

which it can be avoided in such a case. The hope of students of the American franchise situation is that perpetual franchises may eventually get so tied up with limited grants that the companies in self-defense will be compelled to meet the municipalities half way in general franchise settlements along the lines already worked out in Chicago and Cleveland.

Limited-term grants have not proved an unqualified success. If very short they fail to attract capital. If long they have many of the evil features of perpetual franchises with a few peculiar to themselves. As a result of the general dissatisfaction with franchise grants for a definite term, the indeterminate franchise, or grant during good behavior, is slowly gaining in favor. During 1912 New Jersey considered legislation adopting this form of franchise. The state, in 1906, had limited franchises to 20 years, except in cases where they were referred to the people and approved by a majority vote, in which case a 50-year term was allowed. In 1908 the law was amended to permit 50-year grants without referendum in all places of less than 12,000 inhabitants. Experience proved that capital was not sufficiently attracted by these short-term grants to allow the necessary expansion of the public utilities of the state. During the legislative session of 1912 Senator Pierce introduced an indeterminate-franchise bill. It had been drafted by Delos F. Wilcox, chief of the bureau of franchises of the Public Service Commission for the First District of New York and one of the leading authorities in the United States on

franchise matters. It included the main features of the Wisconsin statute, with the addition of a number of points recommended by the franchise committee of the National Municipal League. The bill failed of passage by a vote of seven in the affirmative and six opposed, 11 votes being necessary for adoption. After considerable discussion a general 50-year franchise bill was passed, applying to all the cities in the state and without provision for a referendum. Governor Wilson, an advocate of the indeterminate franchise, vetoed the bill, but it was passed again over his objection.

The perpetual franchise is so well established in most of our large cities that it has ceased to attract the attention of the people. They have come to look upon the matter philosophically as an unfortunate condition fastened upon our cities in the days when politics was more of a private and corrupt business than it is to-day. It is discouraging, however, to find the courts turning into perpetual franchises a number of grants which were silent as to their duration. The Supreme Court of the United States in 1912 in the case of *Louisville v. Cumberland Telephone Co.* established the principle that all such grants are to be interpreted as perpetual. It was the hope of franchise students generally that the court would construe such franchises as indeterminate. Such a holding would have placed in the hands of most American cities the power to compel the public-utility companies to accept modern grants on fair terms. Most of the street-railway grants in New York City, for example, are held under franchises which are silent as to duration. The United States Supreme Court followed well-established precedents in the state courts.

Repeal and Forfeiture of Franchises.—It has always proved much easier to grant franchises than to revoke them or enforce provisions for their forfeiture for failure to conform to their conditions. An interesting case, involving the right of a municipality to exercise a power reserved in a franchise grant to repeal it for cause was decided in the federal court

in Washington during 1912. The city of Seattle repealed a franchise for failure to comply with its conditions and met with an injunction obtained from the United States court. The city argued that its right of repeal was absolute and depended only upon the happening of events which were pure questions of fact and therefore not reviewable in the federal courts. The court, however, took jurisdiction upon the theory that its function was to protect the obligations of the franchise contract. The decision upheld the right of the city to reserve the power of repeal and to exercise it in a proper case.

The city of New York has suffered for a number of years from its inability to compel street railways to remove tracks from the streets in cases where operation has been abandoned. Over 25 miles of such track has encumbered the streets, some of it for as long as 16 years. The companies have resisted every attempt by the municipal authorities to remove the rails, however, in order to protect their franchise rights in the streets. The attorney-general of the state was finally appealed to and several test suits were begun. During the year one of the most important of these cases, that against the Bleecker Street and Fulton Ferry Railroad Co., was settled, securing the removal of a large amount of abandoned track.

Participation of the Electorate in Franchise Granting.—With the growth of the referendum as an instrument of popular government, it is increasingly the tendency to provide in city charters for a referendum vote on all proposed franchise grants. Louisiana, for example, in 1912, adopted the principle for all cities in the state except New Orleans. The new law provides that "every franchise or grant for interurban or street railways, gas or water works, electric light or power plants, telegraph or telephone systems or other public service utilities . . . must be authorized or approved by a majority of the electors voting thereon at a special election called for that purpose by the council." The city of Detroit has furnished an excellent example of such a referendum system

in actual operation. Many of the street-railway franchises have expired and others are nearing their termination. The city administration is in favor of a new grant to the present company. The majority of the voters prefer municipal ownership. The only way in which they can make their wishes practically effective is in exercising their power to defeat proposed grants by the exercise of the referendum vote. In January, 1912, the so-called Thompson-Hally ordinance, granting a new franchise to the present company, was submitted to the people. It provided for a three-cent fare, which was the bait with which its sponsors hoped to catch enough votes to put it through. The Detroit Federation of Labor, the Municipal Ownership Committee, and a number of other civic organizations opposed the franchise vigorously and successfully. The vote against the proposition was 30,648 to 22,259. The traction company continued to operate on Fort Street, one of the important links of the system, where the city claimed that the company's franchise had expired. The city imposed a rental of \$200 a day for the privilege, which the company refused to pay, alleging that the so-called Hally ordinance of 1906 gave it a perpetual franchise. The matter was litigated and in October, 1912, the case was decided in favor of the city, the decision holding that the city was in a position to tear up the tracks unless the company paid the rental fixed by the council.

Chicago and Cleveland.—The experience of these two cities with their street railways is being watched with great interest by the whole country. They are the only two communities which have been able to force general franchise readjustments with the companies. The Chicago ordinance has now been in operation for five years. Experience has shown that the possibility of municipal purchase is growing so remote that it will soon become merely a theoretical right. The city has accumulated a purchase fund of \$8,000,000, while the purchase price has increased during the same period over \$70,000,000. The possibility of municipal purchase

was intended as a club to force the company to give adequate service. It is rapidly losing its efficacy. Cleveland has had two and a half years' experience under its settlement ordinance of March 1, 1910 (*AMERICAN YEAR BOOK*, 1910, p. 228). The chief object of the city in its contract with the railway was to secure low fares. Operation began with a three-cent rate, with a transfer for an additional cent. On June 1, 1911, by virtue of the provisions of the ordinance, the fare was reduced to three cents, with a transfer for an additional cent, which was refunded when the transfer was used. This fare still prevails, despite a growing deficit in the operating and renewal funds amounting on Aug. 1, 1912, to \$503,288.

Columbus.—This city is now reaping the benefits of the provisions of the franchises granted in 1901 to its street-railway companies. It was provided that when the gross receipts reached \$1,750,000 a year, fares should be reduced to eight tickets for a quarter, and that a universal transfer system should be put in operation. The present year has brought these advantages, with an increase of earnings beyond the standard fixed in the franchise.

Consolidation and the Destruction of Competition.—The consolidation of public-utility corporations, with the resultant destruction of competition, goes on apace despite the anti-monopoly and trust laws. In January, 1912, a new \$40,000,000 company was formed, to be known as the Puget Sound Traction, Light and Power Co. The new corporation is really only a consolidation of the Pacific Coast Power Co., the Seattle Electric Co., the Seattle-Tacoma Power Co., the Puget Sound Electric Railway, and the Whatcom County Railway and Light Co. The new corporation has been largely financed by eastern capitalists. In May, 1912, the American Telephone and Telegraph Co., the Bell telephone trust, came into possession of the final instalment of Western Union Telegraph Co. stock, amounting to \$9,733,100. The bulk of the stock was acquired in 1909, but it was impossible to secure title to the shares now taken over, as they

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were pledged as collateral under the Western Union mortgage. The gigantic telephone-telegraph trust is now complete so far as its two largest elements are concerned. During the year the company acquired control of the independent telephone system in the entire northern part of New York state through the absorption of the Mountain Home Telephone Co., the Clinton Telephone Co. of Plattsburg, the Dannemora Telephone Co., and the Adirondack Home Telephone Co. of Malone.

The elevated railroads in the Borough of Brooklyn, New York City, are in process of consolidation as a step in the rapid-transit settlement of 1912 (see *Municipal Ownership, infra*). In October the Brooklyn Union Elevated Railroad Co., the Sea Beach Railway Co., and the South Brooklyn Railway Co., together operating all of the elevated lines in Brooklyn, applied to the Public Service Commission for permission to consolidate their property and franchises. The application will undoubtedly be granted. One result will be the establishment of a five-cent fare from all parts of Brooklyn to Coney Island, a privilege which the people have demanded for a number of years without success.

During the year the Consolidated Gas Co. of New York applied for permission to acquire control of the New York and Queens Electric Light and

Power Co. and the New York and Queens Gas Co. The gas and electric trust is gradually forcing out the few small companies which have remained even nominally independent.

The year 1912 marked the wiping out of the last vestige of competition in the electrical field in Manhattan. The Long Acre Electric Light and Power Co., after establishing its right to a perpetual franchise through litigation carried to the highest court, and after having forced the Public Service Commission to authorize the sale of securities by a similar legal fight (*AMERICAN YEAR BOOK*, 1911, p. 445), sold out to the New York Edison Co., as practically everyone familiar with the situation knew it would do. Control was acquired by the Edison Co. through purchase of the company's bonds. The net result is a cost to the existing monopoly which will inevitably be shifted to the consumer either in the shape of increased rates or poorer service.

A foreign traction merger was completed during 1912 which is of sufficient importance to deserve attention. In January it was officially announced that the Underground Railways Co. of London and the London General Omnibus Co. had agreed to consolidate. The total capital of this enormous undertaking is about £16,500,000. It affects the service of over 450,000,000 passengers a year.

PUBLIC SERVICE COMMISSIONS

The year 1912 has been one of steady growth of the public-service commission scheme of control of public utilities. Experience has strengthened the conviction of experts that state boards are generally superior to local commissions in handling the complicated problems of public-utility control. They are usually less biased by local interest and better able to take a broad judicial view of matters coming before them. One city commission has been discontinued during the year and another has been severely criticized by the courts for arbitrary action. Two new commissions have been created, however, in small Missouri cities.

Arizona.—Article XV of the new

constitution creates what is practically a public-service commission under the title of "Corporation Commission." This body is to consist of three members to hold office for six years. At the first election one is to be elected for six years, one for four years and one for two years, and one is to be elected biennially thereafter. Salaries of commissioners are fixed at \$3,000. The commission is to have general supervisory jurisdiction over transportation, lighting, power and water companies, including the right to pass upon proposed incorporations. It has rate-making power and may prescribe uniform systems of accounts and require financial reports. The right is reserved to the legislature to

permit the establishment of local utility commissions in the following language: "Provided that incorporated cities and towns may be authorized by law to exercise supervision over public-service corporations doing business therein, including the regulation of rates and charges to be made and collected by such corporations." Penalties of from \$100 to \$5,000 are provided for failure to obey the orders of the commission.

California.—On Oct. 10, 1911, a constitutional amendment was adopted permitting the legislature to pass a public-utilities act (Art. XII, Sec. 23, amendment 47). Governor Johnson, in calling a special legislative session in December, 1911, mentioned the necessity for such legislation as one of the reasons for the call. On Dec. 23 (Ch. 14) a thoroughly progressive Public-Utilities Act was passed enlarging the duties of the railroad commission to include the regulation and supervision of all classes of public utilities. The new board consists of five members, holding office for six years, with salaries of \$6,000 each. The provisions of the law are based on the New York and Wisconsin statutes and include specific grant of power to control stock and bond issues, to regulate rates and establish uniform systems of accounts. That there may be no doubt as to the sweeping powers of the board, the law provides that it is to "supervise and regulate every public utility in the state and to do all things, whether herein specifically designated or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction." Broader powers could scarcely be given. The Public-Utilities Act is supplemented by Chapter 40 of the laws of 1911 (special session), which provides that "any city or county or incorporated city or town may retain its powers of control vested therein respecting any one or more classes of public utilities and may thereafter surrender such powers to the Railroad Commission of the State of California . . . or may reinvest itself with such powers as it may have surrendered to the Railroad Commission" at any general or special election. This is a novel and

interesting experiment in home rule for cities. It will permit Los Angeles, which has a local commission, to retain control. The law became effective in March, 1912.

Colorado.—A proposition to establish a public-utilities court received considerable attention during the year. It was suggested that a tribunal of three be created, with salaries of \$5,000. The new court was to be a combination utilities commission and judicial body having rate-making powers. The findings of the court were to be unreviewable in other courts. The measure failed of adoption.

Maryland.—In March, 1912, the legislature passed a resolution calling for an investigation into the workings of the public-utilities law and the methods employed by the commission. The Maryland utilities law is one of the "strong" statutes, giving the commission broad powers. It is not surprising that such a body should be periodically investigated as the result of alleged arbitrary acts.

Massachusetts.—For over 25 years, and until the creation of the Wisconsin and New York public-utility commissions in 1907, Massachusetts was the leader among the states in progressive and effective control of public-service corporations. The state created a board of railroad commissioners in 1869 and a commission of gas and electricity in 1885. Many of the most radical features of financial control embodied in the various public-utility laws have been modeled directly from the Massachusetts statutes. The division of jurisdiction between the state Railroad Commission, which controls steam and street railroads, the Commission of Gas and Electricity, which looks after lighting companies, and the state Highway Commission, with control over telephone and telegraph companies, in the opinion of many, has proved unnecessarily disjointed and expensive. The problems of utility control are essentially the same whether the corporation under supervision is a railroad, a lighting company, or the operator of a telegraph or telephone system. In a special message to the general court early in 1912 Governor Foss urged strongly that the various regu-

lative bodies be consolidated. He said: "I feel very strongly that the General Court can perform no more important work this session for the people of this commonwealth than to provide for more efficient regulation of all of our public utilities." He submitted a bill creating a public-service commission of five members. The proposed body was modeled on the existing commissions in the most progressive states. The bill failed of adoption.

New York.—On Feb. 1, 1912, the terms of William McCarroll and John B. Olmsted as public service commissioners for the First and Second Districts expired. Governor Dix appointed Edward G. Riggs and Herbert Bissell in place of the retiring commissioners. Mr. Riggs, who was named for the First District, was a Brooklyn newspaper man, Mr. Bissell a Buffalo lawyer. Neither had any special experience in public-service matters and were generally regarded as "personal" appointments. The Senate, for purely political reasons, refused to confirm either appointment. Governor Dix thereupon declared that he would send no other names to the Senate, but would allow the retiring commissioners to hold over. He changed his mind with reference to the First District, however, and late in the session nominated George V. S. Williams, who was promptly confirmed, and who assumed office on April 1. Mr. Williams had been attorney for the state conservation commission. No nomination was made for the Second District. On Nov. 1, W. A. Huppuch resigned as commissioner for the Second District. Governor Dix appointed ex-State Senator Curtis N. Douglas, a brother-in-law of the governor. Mr. Douglas' name will be presented to the new state Senate for confirmation.

The major part of the time of the New York City commission continued, as during 1911, to be taken up with rapid-transit matters. The settlement which was finally made with the transportation companies is described under *Municipal Ownership*, *infra*.

During the year, the statute was strengthened in an important particu-

lar. In the case of *People ex rel. Third Avenue Railway Co. v. Public Service Commission* (203 N. Y. 299) the Court of Appeals had held that where a company applied to the commission for permission to capitalize a reorganization after a receivership, the new corporation had an absolute right to issue a volume of securities equal to the old without regard to underlying values. This holding was a severe blow to the powers of the public-service commissions, particularly to that of the First District. Practically all of the street railways in the Borough of Manhattan were in process of reorganization after receiverships caused in large measure by overcapitalization. The legislature of 1912 reversed the court and gave the commissions power to consider values upon a petition for reorganization. Unfortunately, before the law was passed the New York City companies had all reorganized on the old basis. (See also XXII, *Railroads*.)

Oregon.—The legislature of 1911 passed a comprehensive Public-Utilities Act (Ch. 279) enlarging the powers of the state Board of Railroad Commissioners to include supervisory jurisdiction over telegraph and telephone companies, street railways, heat, light, water, and power companies. The operation of the act was suspended by the filing of a petition for a referendum. This was done by persons in favor of a proposed amendment to the charter of the city of Portland which would have created a local city utilities commission. The Portland amendment was lost, leaving the question of the creation of a state commission for decision at the election of Nov. 5.

The Oregon act is not unlike the Wisconsin statute in scope. A large measure of home rule is insured municipalities under the act. Municipal plants are expressly excepted from its operation. Municipalities may determine by contract or ordinance the quality and character of service to be rendered by local public utilities and may order increased facilities. All such contracts, unless adopted through the initiative or referendum, are subject to the approval of the state commission, and, although they

are to be considered *prima facie* reasonable, they may be reversed if shown to be unfair to the companies affected.

Pennsylvania.—Governor Tener has repeatedly urged the passage of a comprehensive public-utilities act for Pennsylvania. The state has, at the present time, a railroad commission. As stated by the governor recently, "the powers of this commission are unworthy of the name. They are simply recommendatory." The legislation proposed by the governor would be broad enough to cover all public utilities, including their incorporation and detailed regulation. Various public-service commission bills have been introduced in the legislature in recent years, but so far corporation interests have been strong enough to defeat them all.

Rhode Island.—In April Rhode Island created a public-utilities commission, to consist of three members, with terms of six years each. The new board supersedes the Railroad Commission. It has jurisdiction over street and steam railroads, telephone, telegraph, lighting, and water companies. The act is decidedly weak, especially in the matter of financial control. No power is given the commission to supervise stock or bond issues or to prescribe uniform systems of accounts, nor even to require financial reports. The commission can test gas and electric meters, establish standards of illuminating power, and investigate service complaints. The first commissioners are William C. Bliss, a former speaker of the House of Representatives, Samuel E. Hudson, the publisher of the *Woonsocket Evening Call and Reporter*, and Robert F. Rodman, who was formerly chief engineer of the state Board of Public Roads. (See also XXII, *Railroads*.)

City Commissions: Chillicothe, Mo. —In January this city, by ordinance, created a public-service commission, to consist of four members to be appointed by the mayor and the city council. Commissioners are to serve without pay. Two of them must be Republicans and two Democrats. The new commission has general supervision over the rates of local public utilities.

Joplin, Mo.—On Jan. 2, despite a strong opposition party, this city established a local public-service commission, consisting of three members, to be appointed by the mayor for terms of two years. Commissioners are to receive \$5 a day. Not more than two may belong to the same political party. The commission has supervisory jurisdiction over rates.

Kansas City, Mo.—One of the first official acts of Mayor Jost, who was elected in April, was to abolish the local public-service commission. As officially stated, "the commission is for the present temporarily suspended." The alleged reason was the expense involved.

St. Paul, Minn.—On May 7, by a vote of 20,640 to 4,137, this city adopted the commission form of government, with a mayor and six commissioners elected every second year. One of the commissioners is styled "Commissioner of Public Utilities." His duties are thus defined in the charter:

Subject to the council, said commissioner shall have full control of the regulation within said city of all telephone, telegraph, lighting, heating, power, street railway, and other municipal transportation, and all other public-utilities services whatsoever, which are subject to the control of said city government. He shall exercise such powers in accordance with ordinances passed by the council upon his recommendation. All licenses, permits and all other privileges granted by said city to public-utility operators, their lessees or representatives shall be first approved by said commissioner.

Wilmington, Del.—The local commission has been severely criticized by the courts for alleged arbitrary action. In one case contested by the Wilmington and Philadelphia Traction Co. Judge Bradford of the United States District Court, in restraining execution of an order of the commission, said: "It is difficult to conceive a treatment more arbitrary, injurious or ruthless than that to which the traction company was subjected by the board."

Status of Public-Service Commission Legislation.—For convenience of reference the following is the list of states and cities with public-service commissions at the close of 1912. The

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rest of the states have no effective state control by commission.

Public Service Commission States

California	New Jersey
Connecticut	New York
Kansas	Ohio
Maryland	Oregon
Michigan	Rhode Island
Nevada	Vermont
New Hampshire	Wisconsin

Arizona has a corporation commission with many of the powers of public-service commissions.

Massachusetts has a Railroad Commission, a Commission of Gas and Electricity, and a state Highway Commission, which together exercise many of the broad powers of public-service commissions.

Partial Control of Public Utilities

Illinois	North Carolina
Iowa	Oklahoma
Louisiana	Pennsylvania
Maine	South Carolina
Minnesota	Tennessee
Mississippi	Virginia
Nebraska	

City Commissions

New York	Wilmington
Los Angeles	Chillicothe, Mo.
St. Joseph	Joplin, Mo.
St. Louis	
St. Paul (one member of the city commission)	
Seattle (single commissioner)	
Houston (single commissioner)	

MUNICIPAL OWNERSHIP

Extension of the Functions of Government.—The American city is slowly following the lead of foreign municipalities in the expansion of government activity to many of the public services heretofore left entirely to private initiative. Functions which only a few years ago were regarded as socialistic or communistic in character are now accepted as but the natural growth of a properly widening sphere of municipal governmental influence. This tendency manifests itself in the annually increasing number of social services undertaken in our cities. During 1912, for example, the city of Two Harbors, Mich., started a municipal coal yard, selling coal at retail considerably below the price charged by private dealers. Houston, Texas, has furnished municipal entertainments, with a special feature made of moving pictures. Concordia, Kan., has the distinction of having one of, if not the first, municipal theatre in the United States. The extension of municipal ownership to many public utilities which are naturally monopolistic in character and intimately bound up with the community welfare is marked. There is still a widespread distrust of the efficiency of municipal operation of those public utilities which require a large or complex organization, based on bitter experience with the extravagance, incompetence, and political character of municipal management in most of our largest cities. In New

York City this distrust has led to a compromise whereby a municipally owned rapid-transit subway is leased for operation to a private corporation (see *AMERICAN YEAR BOOK*, 1911, p. 452, and "New York Subways," *infra*).

New York Waterfront.—An interesting proposition was made to New York City during 1912 to extend this principle to its waterfront freight-terminal business. The Bush Terminal Company has for a number of years operated in the South Brooklyn district what is generally conceded to be the best equipped and managed freight-terminal plant in the United States. The city of New York is gradually municipalizing its waterfront. The terminal company, recognizing this policy, offered to cooperate in the organization of a comprehensive municipal freight terminal, selling its waterfront property to the city, and taking it and other property on a 25-year lease. The company offered to pay to the city 95 per cent. of the gross income with a guaranty that for the first ten years at least this sum should not fall below a return of 5.14 per cent. on the city's investment. This return would pay interest and sinking fund on the city bonds issued to pay for the property and would make it possible to secure their exemption from computation in the city debt. The offer is under active consideration by the city authorities, with

public opinion pretty well divided as to the merits of the scheme.

Another of the serious terminal problems which New York City is trying to solve is the proper organization of the Hudson River waterfront of Manhattan. Congestion of car floats at piers and trucks on the marginal street has become an intolerable burden upon the commerce of the port. The solution suggested by the Commissioner of Docks and favorably considered by a number of the most important commercial associations is the construction of a municipal elevated railroad along the marginal way, connecting with the piers and with warehouses and factories on the land side. The matter is being carefully considered by the Board of Estimate and Apportionment. Whether this plan be adopted or not it is probable that some type of municipal terminal will be constructed along this waterfront. (See also *X, Docks, Wharves, and Waterfronts.*)

New York Subways.—The underground rapid-transit railways of New York City, present and prospective, represent by far the largest municipal-ownership experiment in the United States. The city between 1904 and 1908 completed a system which cost the municipality approximately \$50,000,000 to build and the private company which leased it as much more to equip. The problem of providing necessary additional rapid-transit facilities has occupied the attention of the state and city authorities for a number of years. The "settlement" reached in 1911 is fully described in the *AMERICAN YEAR BOOK* for that year (p. 452). Although it was widely heralded as a final solution, the Interborough Rapid Transit Co., the unsuccessful bidder, again entered the field with a modified offer on Feb. 27, 1912. This offer contemplated the so-called dual system originally proposed in the McAneny report, dividing the new subways between the Interborough Rapid Transit Co., the operator of the present subway, and the Brooklyn Rapid Transit Co. On May 24, 1912, the offer was accepted by the Board of Estimate and Apportionment after a bitter fight by John

Purroy Mitchel, President of the Board of Aldermen, who opposed the terms of the offer as unfair to the city. The net result is that the city is to spend \$125,000,000 in the construction of new subways. The Interborough Co. is to contribute \$56,000,000 toward construction and \$21,000,000 for equipment, and the Brooklyn Co. is to spend \$34,000,000 for construction and \$26,000,000 for equipment—a grand total of \$261,000,000 for new rapid-transit work. The Interborough Co. will operate extensions of its system in all boroughs except Richmond, including a line down Seventh Avenue to serve the new Pennsylvania station. The Brooklyn Co. will operate new lines in Brooklyn and Queens and an important line up Broadway, Manhattan, to 59th Street and over the Queensboro Bridge. The subway leases are for a 49-year term with recapture privileges after ten years. The companies are to deduct from gross income: (1) operating expenses, including depreciation, renewals and obsolescence, taxes, rental of leased lines, and rental paid to the city under existing subway contracts; (2) a sum representing average net earnings of existing lines included in the new systems (in the case of the Interborough \$6,335,000 per year and in the case of the Brooklyn Co. between \$3,000,000 and \$3,500,000 per year); (3) six per cent. upon new investment by the company; (4) the city's actual interest charges on its investment plus one per cent. for sinking fund; the remainder to be shared between the city and the companies.

There is considerable difference of opinion as to the merits of these contracts. President Mitchel contended that under the Interborough offer the city would never get even carrying charges on its new bonds. He claimed that the \$6,335,000 which the Interborough is to receive is \$1,000,000 more than the company is entitled to receive. The fight will probably be renewed when the contracts come before the Board of Estimate for final approval.

Alameda, Cal.—On April 30 a proposition to establish a municipal electric plant at an estimated cost of

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\$150,000 was voted upon and approved.

Baltimore.—Under statutes passed in 1912 the city is allowed to spend \$2,000,000 for conduits in which to place all electric wires. The municipality is also permitted to establish and operate a ferry.

Duluth.—At an election held in February, the city voted in favor of \$700,000 bond issue for a municipal electric plant, but elected a municipal council which proved unfriendly to the plan. A petition for the amendment of the city charter was filed at once to provide for the initiative, referendum and recall. Twenty-four hours later the council declared in favor of municipal ownership and asked the private electric company for a proposition for the sale of its plant. On May 7 the proposed charter amendment was carried by a vote of 5,331 to 1,296.

Omaha.—For a number of years the city has been engaged in litigation over the question of municipalization of the water supply. On July 1 the controversy was closed by city purchase of the private plant for approximately \$6,000,000.

San Francisco.—San Francisco is the first large city in the United States to own and operate a municipal street railway. Work was actually begun in May, 1912, on a comprehensive city system, using as a nucleus the line of the Geary Street Park and Ocean Railway, the franchise for which expired in 1908. The city will acquire a part of the franchises of the United Railroads in December, 1913, through expiration of the terms of the grants. The city has already issued over \$2,000,000 in bonds toward the construction of the new system.

In the fall of 1912 the Public Utilities Committee of the Board of Supervisors reported favorably upon a proposition to establish a municipal telephone system. The matter will probably be submitted to a referendum vote in December.

Wichita.—On Dec. 12, 1911, a referendum vote was held on propositions to establish municipal water works and a city lighting plant. The vote was in favor of the water works, which, as planned, will cost about

\$1,000,000. The lighting plant proposition was defeated.

Winnipeg, Canada.—This city furnishes the most conspicuous example of municipal ownership in America. In addition to a superb water system, the city owns its telephones, asphalt plant, stone quarries, and garbage-incinerating plant. During 1912 the city appropriated money for a municipal gas plant and actively negotiated for control of the electric railways, light and power systems of the Winnipeg Electric Co.

Municipal Markets.—During 1912 the question of municipal markets has attracted considerable attention as one of the proposed solutions for the problem of reducing the high cost of living. City-owned markets are no new thing in this country. The present movement is rather a revival than an innovation. Our larger cities have all had at one time or another extensive markets which have either been abandoned entirely or allowed to degenerate into warehouses or wholesale stores. Chicago has three public squares which were once covered by city markets. St. Louis has abandoned three large markets. New York still has a number of large markets which fail to pay their cost of maintenance, and which are of little use to the general public as retail distributing centers. The revival of interest began with the spectacular campaign of Mayor Shank of Indianapolis, who personally sold garden produce and poultry to demonstrate that "the municipal purchase and sales agent" scheme was the real solution of the high cost of living problem. Toledo, Oklahoma City, Aurora, Ill., and a score of other cities have followed suit in reviving or creating municipal markets during 1912. In New York State a commission on the high cost of living has recommended municipal markets. The City Club of New York has also studied the situation and has reported in favor of wholesale markets. The city has taken steps to create push-cart markets on unused city land.

A Municipal Newspaper in Los Angeles.—In December, 1911, by a vote taken on an ordinance introduced by initiative, Los Angeles established a

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municipal newspaper, the *Los Angeles Municipal News*. According to the president of the City Newspaper Commission, three considerations dictated the founding of the new journal. It was desired to have a paper which should (1) give prominence to municipal matters and not

allow them to be sidetracked by the sensations of the day, (2) publish accurate information on all municipal matters, and (3) allow ample space for the publication of arguments on all sides of public questions. The circulation of the new paper has already reached about 60,000.

LIGHTING

Electric Street Lighting.—Until very recently little attention was paid to scientific illumination in American cities. We were immeasurably behind the great European capitals both in the quality of light furnished and in the manner of arrangement of our lighting systems. American cities have still a great deal to learn, but progress toward a reasonably adequate standard has been rapid during the last few years. The demand for improved lighting of streets has come largely from commercial interests which now realize that illumination is one of the best business getters. In a number of cities the local merchants have borne the entire expense of installation of improved street lights, and in some cases the cost of maintenance.

Mobile, Alabama, has a "white way" paid for wholly by local merchants. So has Chicago, on Milwaukee Avenue.

Electric advertising signs have grown in popularity in recent years. Broadway, New York, is the most conspicuous example of this type of illumination. Each year sees an increase in the elaborateness and ingenuity of the exploiters of this form of advertising appeal. In such streets as Broadway these signs form a valuable addition to the municipal lighting system.

During the year important "white ways" have been opened in Utica, N. Y., Birmingham, Ala., Joliet, Ill., Fargo, N. D., and Mt. Clemens, Mich.

The National Electric Light Association reports that at the beginning of 1912 ornamental street lighting systems in 65 cities were paid for as follows:

	Instal- lation.	Main- tenance.
City	26	8
Merchants	28	18
Central Station	5	14
Property Owners	6	19
City, Property Owners and Tenants	1	0
Property Owners and Mer- chants	1	8
City and Central Station	1	1
City and Property Owners	1	1
City and Merchants.....	1	1

The Centenary of Gas.—The year of 1912 marked the centenary of the use of artificial gas as an illuminant. On April 30, 1812, a charter was granted to the Gas Light and Coke Co. of London, England, and during the same year gas was introduced into the United States. The centenary was celebrated with appropriate ceremonies by various organizations interested in gas and electrical illumination at a conference held at Philadelphia, April 18-19.

WATER SUPPLY

The problem of how to secure an adequate supply of pure water is ever present with municipal engineers. With the growth of our cities the necessity of going farther and farther afield to get water has increased to a point where municipal ingenuity and resources are becoming taxed to the utmost. The great new Catskill system for New York City

is rapidly reaching completion. So, too, is the almost equally wonderful Los Angeles project. San Francisco and a number of other smaller cities have been busy during the year in planning out much-needed extensions to their water-supply systems. (See also XXIII, *Civil Engineering*.)

Dual Water Supply.—The enormous and unnecessary expense of

providing a bacterially pure general water supply for large cities when only a very small portion of it is used for drinking purposes has become a problem which has attracted the attention of many municipal engineers. The chief objection to a dual system is the danger that persons will disregard the warnings against the use of the larger impure supply. This has been the experience of the few private corporations which have equipped their plants with the dual system. At the annual meeting of the New England Water Works Association held in November, 1911, Prof. William T. Sedgwick, of the Massachusetts Institute of Technology, and H. P. Letton, an engineer of the New Jersey Board of Health, proposed a novel scheme involving the use of a small sterile supply for drinking and culinary purposes, and a chemically treated general supply for commercial and other purposes. It was proposed to use calcium hypochlorite in sufficiently large quantities to impart an objectionable taste and odor to the nonpotable water, serving the double purpose of killing germs and warning persons that it was unfit for domestic use. The initial cost of installing the dual system is a serious objection, involving, as it would, a duplication not only of city plant but of house piping. The city of Cleveland is making a study of the probable cost of installing the system. Mr. Schultz, the engineer in charge of the water department, has estimated that the duplication of the city mains alone would cost in excess of \$6,000,000.

Conservation in New Jersey.—New Jersey is trying the experiment of conservation of water through a state water-supply commission with powers to construct great state reservoirs for supplying municipalities at cost. Late in 1911 the commission completed its study for a system to serve the cities of Newark, Paterson, Elizabeth, and East Orange, the towns of Montclair and Nutley, and the boroughs of Totowa and Glen Ridge. It is proposed to construct an enormous reservoir near Midvale with a capacity of 11 billion gallons, which would impound the waters of the Wanaque River.

By combining this with Greenwood Lake it is estimated that a daily supply of from 75,000,000 to 80,000,000 gal. would be available. The cost of such a system would be about \$8,000,000 in addition to the cost of local pipes in the various communities served. The plan has been approved by a number of the municipalities concerned. In October the State Water Supply Commission arranged for the purchase of the so-called Wharton Tract of land, located in Atlantic, Burlington, and Camden Counties, as a watershed to supply all south Jersey municipalities. The purchase includes about 110,000 acres, and will cost approximately \$1,000,000. It was originally purchased some time ago by Joseph H. Wharton with a view to use as a source of water supply for the city of Philadelphia, but the plan was frustrated by the passage of a statute forbidding the diversion of potable water from New Jersey to other states. The new watershed will furnish a supply of 400,000,000 gal. per day.

San Francisco.—The city has completed its extensive new high-pressure water-supply system for fire-protection purposes. It includes 30 miles of salt-water mains and provides a 300-lb. pressure for most of the business district. The water is pumped from the bay. The pumping plant was opened on May 1. The fresh-water portion of the system is supplied from a reservoir on the top of Twin Peaks, 800 ft. above the city. The reservoir was opened on May 12. The entire cost of the new system is estimated at \$5,600,000. At the same time the city is considering a plan for a new water supply for general purposes, using the Hetchy Hetchy Valley as an impounding reservoir. According to City Engineer John R. Freeman, 400,000,000 gal. per day will be available. The project involves the construction of a dam 300 ft. in height, creating a reservoir 270 ft. deep.

Water Waste.—The amount of water wasted through defects in the mains is a serious problem in the larger American cities. It has been estimated by engineers who have investigated the subject that this

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waste in some instances runs as high as 25 per cent. of the total supply. The matter has been brought prominently to the fore during 1912 by a study of the Baltimore system. City

Engineer Whitman reports that water waste is costing Baltimore \$102,200 per year, and that at least ten per cent. of the water consumption is wasted.

SEWAGE DISPOSAL

Pollution of New York Harbor.—Sewage disposal in American cities is each year becoming increasingly a problem of purification of the effluent. Little or no attempt has been made to utilize sewage on sewage farms or otherwise as has been done so successfully in many of the larger European cities. This has probably been due to the fact that our largest cities have, without exception, been so located that there has been a convenient body of fresh or salt water into which to dump the sewage. Our sanitary engineers have availed themselves of this easy method of getting rid of sewage. The result has been that our rivers and harbors, in many instances, have been converted into little better than open sewers. New York City, with its enormous population, has felt the pressure of the problem, despite its wonderful salt-water front. The so-called Metropolitan Sewerage Commission has been studying the matter for years. According to the preliminary reports of this body, the amount of sewage discharged into New York Harbor is about 700,000 gal. per 24 hours. The result is the production of an amount of sewage sludge which is destructive of the expensively dredged ship channels, and which results in offensive odors during the summer and the serious infection of shell fish. The danger to bathers is such that, during the summer of 1912, the Board of Health refused to issue permits for many of the floating baths which, for a number of years, have formed one of the important recreation facilities of the city's poor. Food fishes have practically deserted the lower Hudson, once famous for its shad. Dr. Soper, the president of the Metropolitan Sewerage Commission, summarizes the findings of that body as follows:

It is proposed to collect the sewage of New York to a number of centrally located points near the waterfront and

there remove as much of the impurities as necessary and carry them to sea in tank steamers. For the purpose of collecting the sewage the commission proposes the division of the city into five main drainage districts. For each of these districts a system of arterial collecting sewers leading to disposal works is being designed.

Bronx Valley Sewer.—The controversy between the United States Government and the Bronx Valley Sewer Commission over the pollution of the Hudson River through the discharge of untreated sewage into the river (see *AMERICAN YEAR BOOK*, 1911, p. 459) was brought to a close on July 17 by stipulation between the Government and the commission. In addition to the specific benefits secured, the settlement established an important precedent for federal control over the pollution of navigable waters. It was agreed that on or before May 1, 1913, a purification plant should be completed sufficient at all times to remove from the effluent enough of the putrescible contents "to purify the same to the extent of ten per cent. upon an absolute putrescibility scale." At any time subsequent to Jan. 1, 1917, or to a date when there shall be 50,000 persons contributing to the sewer, the Secretary of War may designate three persons to investigate the pollution of the Hudson and to report necessary changes in the purification system "for the restoration and maintenance of the waters of the Hudson River to and in such degree of purity as will render them adequate for the support of shad and other major fish life." The Secretary of War may order changes recommended by the investigating board. The stipulation may prove the opening wedge which will eventually lead to federal control of the discharge of sewage into navigable waters in all parts of the United States. Such control would do much toward solving the problems

incident to pollution of the waters of one state by action of another.

Passaic Valley Sewer.—As noted in the *AMERICAN YEAR BOOK* for 1911 (p. 458), the state of New Jersey is advancing the plans for this great drain as rapidly as litigation with the state of New York will permit. The controversy furnishes one of the strong arguments for extending federal control to pollution of interstate waters. The 360,000,000 gal. a day which the new sewer will contribute to the already heavily polluted waters of New York Bay will add to the difficulty of keeping the Government ship channels dredged, and thus, apart from considerations of sanitation, it would seem that a proper ground for federal interference exists as in the case of the Bronx Valley sewer. Meanwhile plans for the work are pushing actively ahead. Bids for the construction of the first section were opened on May 14. The litigation between the states is progressing before a special federal master. In October, 1912, the city of New York provided \$30,000 for use of the corporation counsel in representing the city's interests.

Chicago.—Chicago, like New York, has been forced to give careful study to devise unobjectionable means for the disposal of its enormous volume

of sewage. Lake Michigan is the source of the city water supply, and is therefore not available as a sewer outlet. Some 12 years ago the city completed the Chicago drainage canal, into which sewage was poured and diluted with water drawn from Lake Michigan. The plan has proved an entire success, but is becoming inadequate for the city's growing needs. During the current year, the city's chief engineer, Mr. Wisner, has reported in favor of an extensive purification plant which will remove a substantial portion of the putrescible matter before the discharge of sewage into the canal. The federal Government will not permit the city to draw off sufficient water from Lake Michigan to dilute the solid matter sufficiently to render it unobjectionable. The only alternative is the scheme now proposed.

Missouri River.—There is a vigorous campaign in progress to protect the Missouri River from sewage pollution. In December, 1911, commissions from Kansas, Missouri, and Nebraska met in joint session to consider the problem. The Kansas commission has been made permanent. Part of its work is to try to interest all cities and towns draining into the river in plans for sewage purification.

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THE ARMY

C. E. KILBOURNE

ADMINISTRATION

The Struggle Between Line and Staff.—The year 1912 has marked the culmination of the struggle for supremacy in the Army between the line, comprising the combatant troops, including the general staff, and the permanent staff, the most powerful representative of which has been the Adjutant General. The struggle began shortly after the Civil War, when the little Army was so scattered that training, as an army, became impossible, and its administration and supply were the most important duties of the higher officials. As the administration centered in the office of the Adjutant General, his influence became preponderant. The struggle was renewed by Gen. Miles after the revelations of inefficiency of the Spanish War, but the old system was so firmly entrenched that he was able to accomplish nothing. Officers became so accustomed to the preponderance of the staff that the rapid advancement of staff officers by legislation caused no comment, though the promotion of certain line officers by the President for distinguished field service was criticized.

When Elihu Root was appointed Secretary of War he realized that the Army was neither economically nor efficiently administered, and decided that the line of the Army should have the deciding voice in its policies. He secured the legislation necessary for the formation of a General Staff Corps which should be made up of line officers detailed for a limited period, with a chief of staff who should have supervisory

powers over all staff departments. For a while little was accomplished. The officers of the general staff were ignorant of War Department methods and the new corps had to make its own place. Improved methods of training were prescribed, closer relations were established with the militia, and our own system was studied in comparison with that of other armies, but so far as the control of our own army was concerned there was no change. The successive chiefs of staff would endeavor to exercise the power given by law only to find their efforts blocked or deflected by long-established precedents. This continued till Gen. Leonard Wood succeeded to the office.

General Wood's Reorganization Scheme.—A short time after Gen. Wood became chief of staff he caused to be issued certain orders prescribing administrative methods that were resented by those who were wedded to the old system. And when, early in the year, he made recommendations for the reorganization of the Army so radical that not only Congress but the Army itself was surprised, he found strong opponents. The Secretary of War approved the plans of Gen. Wood and even extended them, and the officers on duty in the general staff had no difficulty in submitting proof of the wisdom of their chief's position, but unfortunately the struggle between those who favored the changed policy and those who opposed it was carried into Congress.

The most important changes advocated by the Chief of Staff were the concentration of our scattered

mobile army for tactical training and economical administration in about a dozen posts, the shortening of the term of enlistment to a period just necessary to make a soldier, and the formation of a reserve large enough to fill the ranks of the reduced organizations in time of war. The Chief of Staff believed that the lesson of the Spanish War, showing the danger of filling the ranks with raw recruits at the outbreak of hostilities, was so recent that he would have a united Army behind him. But there were many who did not believe in the short-enlistment period and who considered any reserve we might form from our small army would amount to nothing. These officers, among whom was the Adjutant General, Gen. F. C. Ainsworth, took the opposite side, and, on request, furnished Congress with an expression of their ideas.

The Army Appropriation Bill.—Finding the Army divided, Congress accepted the opinions of those they had been used to consult for so many years. When the Army Appropriation bill was introduced into the House it carried many "riders." Instead of a short enlistment with a period in reserve, as recommended by the Chief of Staff, the enlistment was increased to five years—as long as we have ever had. There was a proviso for the consolidation of the General Staff Corps with some of the permanent staff departments, so drawn that the latter would control the Army for a decade. The positions of chief of coast artillery and chief of the division of militia affairs were abolished. There were other items opposed to the ideas of the Secretary of War and the Chief of Staff, and again legislation was favorable to the permanent staff in that certain of its officers were assured high rank upon retirement.

About the same time, the trouble between the Chief of Staff and the Adjutant General came to a crisis. The Secretary of War considered that the latter had been insubordinate and disrespectful, and on Feb. 14 relieved him from duty in the War Department. The Adjutant General almost immediately applied to be placed on the retired list; his

request was granted. Some of his friends in Congress demanded an investigation and the Secretary of War furnished them with a complete report (House Document, Report No. 508, 62d Cong., 2d Sess.).

With some of the "riders" eliminated and others added, the appropriation bill passed the House Feb. 16. One of the provisos which was added reduced the cavalry arm of the service by five regiments. As the situation on the Mexican border was serious at the time, this attracted a great deal of attention. The Senate objected, not only to this but to every other piece of new legislation carried in the bill. Committees for conference were appointed and the bill referred to them. When it was again submitted to Congress on May 27 it was scarcely recognizable. While some of the more radical of the original "riders" were omitted, and all of them changed more or less, another spirit was introduced into the controversy. One of the new "riders" was so worded that Gen. Wood could never again act as chief of staff in time of peace. The conference report was adopted by the Senate June 10, and by the House three days later. The President promptly vetoed the bill. This left the War Department without funds to continue the administration of the Army and three special resolutions had to be passed continuing the Appropriation Act of 1912 before an act for the support of the Army was finally accepted by the President on Aug. 9.

Recommendations of the General Staff Corps.—In the meantime a committee of the General Staff Corps had prepared and submitted a report on the organization of the land forces of the Government. The report was considered in conference in the office of the Secretary of War; the Chief of Staff and the chiefs of all staff departments and corps were present and members of the Military Committees of the Senate and House were invited to attend. The salient features of the report were:

(1) The recognition of the distinct and separate duties of our armed forces at home and of those in our foreign possessions, and the

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provision for the organization and training of each for its special mission.

(2) The recognition of the fundamental differences existing between the mobile army and the coast artillery; the formation of coast-artillery departments under command of coast-artillery officers was recommended.

(3) The necessity for the separate command in time of peace of organizations which could not possibly be united for service in time of war.

(4) The necessity for organizing tactical divisions (skeleton for the present) distinct from territorial divisions.

(5) Provision for placing under each brigadier general the number and kind of troops he would command in war, this for the purposes of inspection until arrangements could be made for these troops to be concentrated under his immediate command.

(6) The rearrangement of the stations of troops so that those to be tactically trained together might be within marching distance of a common center.

(7) The assembling of these units for training as brigades.

(8) The advisability of the gradual abandonment of the expensive post system now in vogue and the concentration of the mobile army near strategic points and centers of supply.

(9) Provision for the training in maneuvers of the three arms (infantry, cavalry, and field artillery) combined.

(10) The necessity for a reserve large enough to bring the skeleton organizations to full strength in time of war, and the best method for accomplishing this object.

(11) Provision for the use of the militia beyond the national boundaries in time of war, and for the payment of members of militia organizations in which a prescribed strength and a satisfactory system of training were maintained.

(12) A recommendation that authority be obtained for the administration of the quartermaster, subsistence, and pay departments as a

single department of supply for a period of three years, at the end of which time a plan for their permanent consolidation to be submitted to Congress.

The main features of the report were accepted and approved as the policy of the War Department before the passage of the Appropriation Act for the support of the Army. This Act as finally passed and approved in August contained features the effects of which are still to be determined. The reserve provision desired was incorporated, but with a longer period with the colors than was deemed necessary by the general staff. The three supply departments were consolidated without awaiting the three years' test recommended. A provision prevented officers below the rank of major from being placed on detached service of any kind in time of peace, or remaining on such service unless such officers had served at least two of the preceding six years on duty with a company, troop, or battery. The act again legislated certain officers of the permanent staff corps into rank above that of line officers of much longer service.

Appropriations.—The appropriations for the fiscal year 1913 under the various acts are given in the following table:

Army Appropriation Act..	\$90,483,498.16
Fortification Act	4,086,235.00
Military Academy	1,064,688.26
Sundry Civil Act (Isthmian Canal defenses) ..	2,806,950.00
Sundry Civil Act (Armories and Arsenals)	365,950.00
Sundry Civil Act (Quartermaster Dept.)	594,425.98
Deficiency Act (Military Establishment and Academy)	2,474,142.61
Legislative, Executive and Judicial Act	2,992,298.00
Total	\$108,737,441.01

The first item includes the pay of retired officers and enlisted men. A large percentage of the last item is properly chargeable to pensions, as the pension records are kept in the adjutant general's office and the clerical force is paid from this appropriation. (See also *Pensions, infra.*)

THE REGULAR SERVICE

Foreign Garrisons.—Until this year the various units of each arm of the service have been maintained at approximately the same numerical strength, regardless of station; that is, a company of infantry on foreign service had approximately the same number of men as a company of infantry at home. The number has, of course, been materially below that contemplated in Field Service Regulations. The idea has been that, should war become imminent, the companies could be rapidly recruited to full strength. While this plan is feasible in the United States, and, in fact, is wise if we have the necessary reserves, it is evident that it cannot apply to our distant possessions, where the American population of an age suitable for military service is negligible. Acting on the recommendation of the general staff the Secretary of War has corrected this defect. In the Philippines, for example, the regiments have been recruited to full war strength, and the number of regiments reduced; at the same time, the policy of concentration has been put in force. The result is to give the force an increased number of effective rifles, sabers, and field pieces with a reduced number of administrative offices. To make a consistent and continuous training possible, and to effect further economies in transportation, the regiments, which heretofore have been changed every two years, have been given permanent stations, and the change of personnel so arranged that it will be gradual, the newcomers absorbing the experience and knowledge of those on the ground, and, in turn, transmitting it to those who follow. We thus insure a better and more effective foreign force, and, at the same time, gain several regiments at home. The gain, however, will soon be absorbed by the demands for increased garrisons in the Canal Zone and Alaska.

Coast-Defense Troops.—The troops of the Coast Artillery Corps have always been maintained as near authorized strength as possible, and five years ago were able to man nearly one-half the coast defenses then

completed. The fortifications in the Philippine Islands and in Hawaii, however, are making a severe drain on the home defense, which will be increased by the Isthmian Canal and Guantanamo fortifications now under way. Within a few years about 35 per cent. of our coast-defense troops will be required for constant service away from home. Earnest effort is being made to compensate, in part, for this by training the militia of the coast states, and this year some 7,700 officers and men are enrolled as coast artillery reserves.

Maneuvers.—The withdrawal of the greater part of the regular troops from the Mexican frontier has made possible the resumption of the joint maneuvers of regulars and militia. Forty-three of the states sent contingents to these maneuvers and some 60,000 militiamen have had the advantage of field training under service conditions. The development of maneuver campaigns has made 1912 the best year of instruction so far. There have been five of these, the campaign for the defense of New York City, in which about 20,000 regulars and militia were engaged, being the largest.

The coast artillery reserves were assembled in 11 of the largest artillery districts for practical training. Besides the drills and subcaliber practice, service practice at moving targets was held, full charges being used. The instruction was given under supervision of regular officers, but many of the more important positions in the manning details, heretofore filled by regular troops in these exercises, were entrusted this year to militiamen.

The troops left on the Mexican border have enforced the neutrality laws by constant patrolling. Two battalions of the 15th Infantry have been on duty in China, forming part of an international force maintaining railway communication between Peking and the sea.

Medical Corps.—That the efficiency of the Medical Corps has been maintained is evidenced by the fact that the number of admissions to sick report, of non-effectives from disease, and of discharges for disability has been the smallest of any year

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since the Spanish-American War, and the death rate the lowest except for one year. Detailed studies have been made with a view to determining the best method of avoiding the causes of temporary and permanent disability among troops and the success which has attended the introduction of typhoid prophylaxis is an example of the work of the corps along these lines; latest figures indicate that the prevalence of typhoid in campaign will be reduced about 70 per cent. The practical elimination of beri-beri from the native troops of the Philippine Islands is another triumph for the Medical Corps.

Signal Corps.—The Signal Corps has perfected the organization and equipment of the authorized field companies, which are now prepared to meet any emergency that might arise in furnishing communication between the several units of an army in campaign. The administration of the telegraph and cable system of Alaska has continued under charge of the Signal Corps. Approximately 40 telegraph, 20 cable and ten wireless stations have been operated. Practically all public correspondence, usually the subject of written communication, is sent by telegraph on account of the great distances and absence of railroads. Besides this public business, the corps has handled private business during the past year at the rate of approximately \$1,000 a day. In addition to the foregoing the Signal Corps has charge of military aviation.

Military Aviation.—The remarkable progress of military aviation in Europe has aroused interest in the United States, and the House of Representatives called on the Secretary of War for a complete report, which was submitted April 20 (House Document No. 718, 62d Cong.). A comparison of the development of military aviation by the leading nations shows the following: trained military aviators, France 150, Germany 50, Great Britain 25, Russia 23, United States 11; appropriations, France \$6,400,000, Great Britain \$655,000, United States \$100,000; dirigibles, Germany 30, France 15, Russia nine, United

States one; aeroplanes, France 174, Russia 150, Great Britain 86, Germany 50, United States 16. Italy is not included, as that nation's appropriation of \$2,000,000 was a war measure and cannot be accepted as indicating a permanent policy.

Aeroplanes have been used in war by Italy and in maneuvers by England, France, and Germany. Their offensive value is still to be proved. For reconnaissance work, however, their practical value is no longer to be doubted, although the idea that airships, in their present stage of development, can displace cavalry in reconnaissance work has been entirely discredited.

The military aviators of the U. S. Army are perfecting themselves in the use of the hydroplane as well as the aeroplane. Two of our officers have been killed during the year. (See also XXIII, *Aeronautics*.)

Engineer Corps.—The Corps of Engineers has continued in charge of the construction of seacoast batteries and stations, and is maintaining an efficient body of men trained to accompany a mobile army in war and perform the engineering duties incident to campaign. The most striking work of the corps has been the rapid and successful prosecution of the Isthmian Canal (see X, *Panama Canal*). Its officers are charged also with all the more important works in the improvement of rivers and harbors (see X, *Waterways*).

The Supply Corps.—The consolidation of the quartermaster, subsistence, and pay departments into the Quartermaster Corps has already been mentioned. These and the Ordnance Department have been improving the arms, equipments, clothing, and food furnished the Army. The remount depots established by the quartermaster department are now an assured success. The most important development of the year has been a machine gun invented by Lieut.-Col. I. N. Lewis of the Coast Artillery Corps. Machine guns heretofore in use have been subject to overheating and jamming, and have been usually unreliable on these accounts. The Lewis gun has a grooved jacket of high conductivity over the steel bar-

rel, and the blast is utilized to force a strong draft through the grooves, thus keeping the temperature of the barrel comparatively low. The gun fires about 600 shots per minute. Tests for acceptance are still pending, but the gun has been used successfully both on land and from aeroplane, and its ultimate adoption seems probable.

Cavalry.—There has been no change during 1912 in the system of training of our cavalry troops, though orders assuring uniformity throughout the service have been issued. The greatest effort has been to bring to higher perfection the riding of the personnel. The improvement has been marked. Officers of our cavalry participated in the Stockholm competition against picked officers from all the large armies of the world. The Americans came out third in the contest. The character of the events may be judged by the fact that there was a steeplechase of $2\frac{1}{2}$ miles, with several very difficult jumps, and one ride of 33 miles, the last three being a "cross-country run." It is claimed by many that, had our officers had mounts equal to those ridden by their competitors, they would have been second and possibly first in the contest.

Field Artillery.—The School of Fire at Fort Sill, Oklahoma, has made rapid progress. Forty-two regular officers have taken the course and 24 militia officers have been detailed for varying terms at the school. The provision of moving targets which insure firing under conditions simulating those of an actual engagement has served to develop practical knowledge of fire direction and control which has markedly increased the efficiency of this important arm. So rapid has been the improvement in field-artillery methods that the drill regulations issued only a few years ago have been subjected to continual changes; the fourth edition was completed and issued to the service late in the year.

Infantry.—The system of infantry training has been changed completely by the issue of the new drill regulations, in which the formal maneuvers and ceremonies have been

relegated to the position their minor importance makes appropriate. Training for combat is now the keynote, and both the regular and the more progressive militia troops have welcomed the change with encouraging enthusiasm.

Especial attention has been given to increasing the marching capacity of the troops. Several long and severe marches have been made, the most successful being a march of 30 miles across country by a regiment of infantry in a single day. Not a man left the ranks, and they ended in first-class condition.

Coast Artillery.—The increasing range of naval guns has caused a corresponding increase in the range at which coast-artillery target practice is held; the larger guns were fired this year at an average of 9,000 yd. The conditions of the practice were still further increased in difficulty by requiring the target (which is only about one-tenth the size of a modern battleship) to be towed at an angle of from 40 deg. to 70 deg. to the line of fire, thus causing a material change in the range for successive shots. Also, in some cases, firing under emergency conditions, in which a portion of the range-finding system was assumed to have been destroyed, was required. With the smaller guns practice was held at night. Due to these causes the percentage of hits was smaller than that for last year, but the practice was of greater value and the accuracy was great enough to insure a destructive fire. The training of the personnel has now reached such a stage that, under normal conditions, the accuracy of the armament alone limits the result.

The Philippine Government.—The just, though strong, government of the Philippine Islands by the War Department has resulted in a further extension of material prosperity, education and the knowledge of self-government. In the southern islands, inhabited by the warlike Mohammedan Moros, the local administration is still under the immediate control of the Army. Here General Pershing has accomplished what was thought by many to be impossible—the peaceable disarmament of the

Moros of the Lanao District and the Sulu Archipelago. There was some resistance in the Island of Jolo, but it was promptly discouraged. (See also VIII, *The Philippine Islands*.)

Military Education.—The system of military education in the United States Army is second to none. The following schools have been in operation during the year: U. S. Military Academy, post schools for enlisted men and garrison schools for officers at each military post, Army War College, Army Staff College, Coast Artillery School, Engineer School, Mounted Service School, Army Medical School, Army Signal School, Army School of the Line, Army Field Engineers School, Army Field Service School for Medical Officers, School of Fire for Field Artillery, School of Fire for Coast Artillery, School for Farriers and Horseshoers, and two schools for bakers and cooks. In addition to the foregoing, 65 officers have been detailed as inspector-instructors of militia, and 100 have been detailed as military professors at colleges and academies. On Aug. 31, 1912, Major-General Thomas H. Barry was succeeded as superintendent of the United States Military Academy, West Point, by Colonel C. P. Townsley.

Fortification of the Panama Canal.

—The fortifications for the defense of the Panama Canal, appropriations for which were made in 1911 (see *AMERICAN YEAB BOOK*, 1911, p. 441) will consist, first, of seacoast forts at each terminal and, second, of field fortifications around the locks.

The object of the seacoast forts is to prevent an enemy in war from blocking the canal by sinking vessels within, and to provide an area at each end in which our own fleet can emerge and take up battle formation under the protection of the fire from our own forts. The plan of fortification was drawn by a board consisting of selected officers of the Army and Navy. Approximately \$6,000,000 has been appropriated for the purpose. At each end of the Canal there have been provided the most powerful coast-defence batteries so far planned by any nation. The smallest gun is the 6-in., firing a 100-lb. shell. There are 14-in. bat-

teries at each fort, these guns having a range of 18,500 yd. At the Pacific end there will be also one 16-in. gun. In addition to these direct-fire guns, each fort will have a number of the latest model mortars; these weapons fire at an angle of 45 deg. or more, and are designed to attack the deck of a warship; their maximum range is 20,000 yd. They are especially valuable in preventing long-range bombardment and in searching out an enemy who might take refuge behind an island or around a bend in the coast where the direct-fire guns could not reach him. Finally there will be provided a mine field at each terminus, sufficiently advanced to sink any vessels sent in under cover of darkness long before such vessel could reach the Canal.

The work is progressing rapidly. The plans have been drawn for all these batteries, the concrete work of about 25 per cent. of them is well under way, and as many more have the excavations practically completed. Every battery will be of the concealed (disappearing-gun) type and practically invulnerable to an enemy's fire. The manufacture of the guns and carriages and the ammunition is well advanced and deliveries of the armament will begin during the current fiscal year. It is anticipated that the batteries will be completed by the time the Canal is opened for traffic. (See also X, *Panama Canal*.)

The field fortifications for the defence of the locks will be permanent in character and will mount 4.7-in. howitzers. The object of these defences is to prevent damage to the more vulnerable portions of the Canal by raiding parties of an enemy landed beyond range of the seacoast forts.

The garrison which it is proposed to station in the Canal Zone will consist of three regiments of infantry, one squadron of cavalry, one battalion of field artillery, 12 companies of coast artillery, and the necessary auxiliaries. All these organizations will, of course, be maintained at full strength. So far Congress has not provided funds to construct the necessary buildings for the accommo-

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of these troops, the one registered (at reduced strength) now on the ground being quartered in some abandoned houses built for the employees. Estimate has been submitted for funds to provide approximately one-half the buildings required.

AUTHORIZED STRENGTH OF THE ARMY

	Major gen- erals	Brigadier- generals	Colonels	Lieutenant- colonels	Majors	Captains	First lieutenants	Second lieutenants	Chaplains	Total com- missioned officers	Enlisted men
General officers.....	6	15	.....	.....	.....	.....	.....	.....	.....	21	.....
Adjutant General's De- partment.....	1	5	7	10	.....	.....	.....	.....	23	.....
Inspector General's De- partment.....	1	3	4	9	.....	.....	.....	.....	17	.....
Judge Advocate General's Department.....	1	2	3	6	.....	.....	.....	.....	12	.....
Quartermaster Corps.....	1	2	12	8	48	102	.....	.....	.....	183	403
Medical Department.....	1	15	24	105	133	340	.....	.....	618	(b)
Corps of Engineers.....	1	12	19	39	51	47	43	1	213	1,942
Ordnance Department.....	1	6	9	19	25	25	.....	.....	85	735
Signal Corps.....	1	1	2	6	18	18	.....	.....	46	1,212
Bureau of Insular Affairs. Fifteen regiments of cav- alry.....	1	1	.....	1	.....	.....	.....	.....	3	.....
.....	15	15	45	225	225	225	15	765	13,823
Six regiments of field artil- lery.....	6	6	12	66	78	78	6	252	5,417
Coast Artillery Corps.....	1	14	14	42	210	210	210	14	715	18,471
Thirty regiments of in- fantry.....	30	30	90	450	450	450	30	1,530	30,341
Porto Rico Regiment of In- fantry.....	11	10	10	1	32	591
Military Academy.....	2	5	.....	.....	.....	.....	.....	7	630
Detached officers.....	8	9	27	77	79	.....	.....	200	.....
Additional officers.....	32	13	.....	.....	.....	.....	.....	45	.....
Recruiting parties, recruit depots, and unassigned recruits.....	7,000
Service school detachments United States Military Prison guards.....	587
Indian scouts.....	320
.....	75
Total Regular Army..	7	26	164	178	459	1,368	1,482	1,016	67	4,767	81,547
Additional force: Philippine scouts.....	52	64	64	.....	180	5,732
Grand total.....	7	26	164	178	459	1,420	1,546	1,080	67	4,947	87,279

^a Includes 113 first lieutenants of the Medical Reserve Corps on active duty, and 60 dental surgeons.

^b Under the act of Congress approved March 1, 1887 (24 Stat. L., 435), the enlisted men of the Medical Department (Hospital Corps) are not to be counted as part of the strength of the Army. The authorized strength of the Hospital Corps is 3,500 enlisted men.

DISTRIBUTION OF THE COMBATANT TROOPS

(October 1, 1912)

	Infantry	Cavalry	Field Artillery	Coast Artillery	Philippine Scouts
United States.....	22 Regiments	12 Regiments	4½ Regiments	158 Companies	.....
Alaska.....	1 Regiment	.....	.....	.....	.....
Panama.....	1 Regiment	.....	.....	.....	.....
Porto Rico.....	1 Regiment	.....	.....	.....	.....
Hawaii.....	2 Regiments	1 Regiment	½ Regiment	2 Companies	.....
Philippines.....	3½ Regiments	2 Regiments	1 Regiment	10 Companies	52 Companies
China.....	½ Regiment	.....	.....	.....	.....
Totals.....	31 Regiments	15 Regiments	6 Regiments	170 Companies	52 Companies

THE ORGANIZED MILITIA

The organized militia at the close of the inspection season of 1912 consisted of 9,142 officers and 112,710 enlisted men, an increase of 3,864 as compared with the strength in 1911. There are 40 general officers, 129 adjutants general, 74 inspectors general, 121 officers and 92 enlisted men in the quartermaster department; 65 officers and 39 enlisted men in the subsistence department; 744 officers and 2,709 enlisted men in the medical corps; 57 officers in the pay department; 122 officers and 1,078 enlisted men in the engineer corps; 143 officers and 57 enlisted men in the ordnance department; 82 officers and 1,177 enlisted men in the signal corps; 125 inspectors of small-arms practice; 127 chaplains; 264 officers and 3,997 enlisted men cavalry; 274 officers and 4,706 enlisted men field artillery; 472 officers and 7,228 enlisted men coast artillery; and 6,216 officers and 91,627 enlisted men in the infantry.

Of the states New York leads in numbers of militiamen, having a total of 15,700. Pennsylvania is second with 10,424 and Ohio third with 6,296. With reference to population, however, Wyoming has the greatest percentage of citizen soldiery, 9.28 per cent. of the male population of militia age being enrolled in the organizations of that state. Hawaii is second with 4.49 per cent., and New Hampshire third with 2.96 per cent.

The reports of the inspector instructors of militia indicate that the existing organizations are better trained, better armed and equipped, and better uniformed than ever before. Discipline has in general shown improvement, with corresponding improvement in the care, preservation and use of the federal property in the hands of the organized militia. In many ways, however, there is much to be done before the militia can be considered an effective force. While there are enough infantry organizations to form 15 tactical divisions, they are lacking 35 troops of cavalry, 51 batteries of field artillery, 23 companies of engineers, 3 companies of signal

troops, 49 field ambulance companies and 47 field hospitals. Before the divisions could take the field these units would have to be enlisted, equipped and trained. And the organizations are far short of the enlisted strength required by modern tactics. In this last respect, however, there is reason to believe that many discharged militiamen (the average discharges per year are about 20,000) would return to the colors in time of war.

The lack of suitable armories is a serious handicap. Of 1,977 organizations 511 have no suitable building for indoor instruction. The tendency to develop the individual at the expense of the organization is very noticeable in some organizations. For example, out of the total strength only 73,869 took part in small-arms practice during the year, though certain individuals make remarkable scores in the competitions which have always been a feature in militia training.

The matter of the payment of militia from federal funds has been under consideration during the past two years. The main objection to this has been the constitutional provision that militia could not be made to serve beyond the limits of the United States, and the general staff of the Army has not been willing to recommend payment of militia until this could be changed. A bill has been prepared by the general staff and a committee of leading militiamen which authorizes the President to transfer to the Army organizations of the militia in war or impending war, and provides for the payment of those organizations in which a certain standard is maintained. The bill was favorably reported by the military committee of the House during the last session, but was not taken up in the Senate. There is every reason to believe that it will become law during the present session of Congress, and if so, it is expected that the ranks of existing organizations will be rapidly filled, and that the necessary new organizations to complete most of the tactical divisions will be formed. This will result in a net gain in national military strength of at least 50 per cent.

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PENSIONS

The Sherwood Bill.—House Bill No. 1 of the second session of the Sixty-second Congress was the Sherwood bill (AMERICAN YEAR BOOK, 1911, p. 74), "granting a service pension to certain defined veterans of the Civil War and the War with Mexico." It provided for every honorably discharged veteran of either war a pension proportionate to the length of his service above a minimum of 90 days in the Civil War and of 60 days in the War with Mexico, as follows: for service up to six months, \$15 a month; six to nine months, \$20 a month; nine months to one year, \$25 a month; and one year or more, \$30 a month. The cost of providing these allowances was estimated by the Secretary of the Interior at \$75,000,000 a year, a charge which the Treasury would be unable to meet out of its present revenue. Nevertheless, the measure passed the House of Representatives Dec. 12, 1911, after a debate of practically a single day, by a vote of 229 to 92, 84 Democrats, and eight Republicans voting against the bill.

The Smoot Bill, substituted in the Senate for the Sherwood "Dollar-a-Day" bill, passed the Senate March 29 by a vote of 51 to 16, all the dissentients being Democrats. This measure, estimated to add \$24,000,000 to the annual expenditure for pensions, made the amount of the pension dependent upon both the length of service and age of the pensioner, and an amendment prohibited those with an income of \$2,400 a year

from sharing in its benefits. The detailed provisions were as follows:

When a man had reached the age of 62 years and had served 90 days in the Civil War he should receive \$18 per month; 6 months, \$18.50; 1 year, \$14; 1½ years, \$14.50; 2 years, \$15; 2½ years, \$15.50; 3 years and over, \$16 per month. When such person had reached the age of 66 years and served 90 days, \$15 per month; 6 months, \$15.50; 1 year, \$16; 1½ years, \$16.50; 2 years, \$17; 2½ years, \$17.50; 3 years and over, \$18. When such person had reached the age of 70 years and had served 90 days, \$18; 6 months, \$19; 1 year, \$20; 1½ years, \$21; 2 years, \$22; 2½ years, \$23; 3 years or over, \$24 per month. When such person had reached the age of 75 years and served 90 days, he should receive \$21 per month; 6 months, \$22.50; 1 year, \$24; 1½ years, \$25.50; 2 years, \$27; 2½ years, \$28.50, and 3 years and over, \$30 per month.

The Compromise Bill.—Conferees of the Senate and House of Representatives agreed May 2 on a compromise pension bill, which passed the Senate May 7 and the House May 10, and received the President's signature May 11. As finally enacted, the measure affects 240,985 pensioners, without limitation as to income from other sources, and increases the annual expenditure for pensions by \$25,797,502. Its provisions were based on those of the Smoot bill, the rates of which were altered as follows:

When a person had served in the Civil War or War with Mexico and

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reached the age of 66 years and had a service of $2\frac{1}{2}$ years, he should receive \$18 instead of \$17.50 per month; 3 years' service, \$19 instead of \$18 per month. In case such person had reached the age of 70 years and served $1\frac{1}{2}$ years, \$21.50 per month instead of \$21; 2 years, \$23 per month instead of \$22; $2\frac{1}{2}$ years, \$24 instead of \$23 per month; 3 years and over, \$25 per month instead of \$24. And in case such person had reached the age of 75 years and served $1\frac{1}{2}$ years, \$27 instead of \$25.50; 2 years, \$30 per month instead of \$27; $2\frac{1}{2}$ years, \$30 per month instead of \$28.50; and 3 years \$30, as provided in the Senate amendment.

The Pension Appropriation Bill, approved by the President Aug. 17, carried appropriations of \$153,682,000. It contained a provision for the abolition of 18 independent pension agencies on Jan. 31, 1913, and the disbursement of all pensions from the Pension Bureau in Washington. The work of the Pension Bureau was greatly hampered during July and August by the delay in passing the Appropriation bill, which was caused by a conflict between Senate and House over the date on which the agencies should be abolished. On Aug. 1, 200,000 pensioners were left unpaid, Congress having provided an interim appropriation of only one twenty-fourth of the appropriation for 1912.

Statistics.—The number of pensioners on the rolls and the total disbursements for pensions during the fiscal years indicated have been as follows:

YEAR	Number		Disbursements
	Invalids	Widows, etc.	
1867...	71,856	83,618	\$20,784,789.69
1870...	87,521	111,165	29,351,488.78
1880...	145,410	105,392	56,689,329.08
1890...	415,654	122,290	106,093,850.39
1895...	751,456	219,068	139,812,294.80
1900...	752,510	241,019	138,462,130.68
1905...	717,761	280,680	141,142,861.33
1910...	602,180	318,903	159,974,066.08
1911...	570,050	322,048	157,325,160.35
1912...	538,000	322,294	152,986,433.73

The amounts that have been paid for pensions to soldiers, sailors, and marines, their widows, minor children, and dependent relatives on account of military and naval service in the several wars and in the regular service since the foundation of the Government to June 30, 1912, are as follows:

Revolutionary War ..	\$70,000,000.00
War of 1812.....	45,890,843.39
Indian Wars	11,713,609.51
War with Mexico....	46,447,872.44
Civil War	4,129,699,071.99
War with Spain.....	88,114,062.42
Regular Establishment	25,014,227.64
Unclassified	16,488,476.49

Total\$4,383,368,163.88

THE NAVY

CARLOS GILMAN CALKINS

ADMINISTRATION

Navy Department.—The Secretary of the Navy announces the policy of the Department as that of combining economy with efficiency, and he reasserts a favorable opinion of employing four senior line officers as aids for the performance of advisory duties. These relate to the adjustment of the recommendations of the bureaus to promote the military efficiency of the fleet. The chiefs of the seven bureaus of the Navy Department are credited with earnest effort to secure coöperation and economy under this advisory system. The bureaus authorized by law are those of Yards and Docks, Naviga-

tion, Ordnance, Construction and Repair, Steam Engineering, Supplies and Accounts, Medicine and Surgery, and Equipment; but under the present system it has been found practicable to distribute the operations of the Bureau of Equipment, and no chief of that bureau is now in office. The chiefs of bureaus are nominated by the President for four years with increased rank. The aids for Operations, Personnel, Material, and Inspection are simply assigned by the Secretary, and they have no independent executive authority.

The General Board appointed to consider the number and types of vessels proper to constitute the fleet and plans for its preparation for war

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continues to hold sessions with the Admiral of the Navy as president.

The Bureau of Yards and Docks, which now directs all public works at the naval stations, the office of the director of navy yards, and the headquarters of the Marine Corps at Washington are placed under the supervision of the Assistant Secretary of the Navy.

Appropriations.—Congress did not pass the Naval Appropriation bill until Aug. 22, and the service was provided for after June 30 by extending the appropriations of the previous fiscal year. The total sum voted for the year ending June 30, 1913, was \$123,220,707, a reduction of \$3,257,630 from the appropriation for 1912. The bill authorized a smaller increase in tonnage than has been the custom for some years past; but the reduced estimate for the increase of the Navy, amounting to \$20,569,373, was regulated by the requirements of existing contracts. The largest item is the pay of the Navy, for which \$37,280,971 was allowed. Rations for the fleet cost \$8,542,328. The Bureau of Ordnance is authorized to spend \$12,494,500 for guns, ammunition, and torpedoes, besides certain unexpended balances and the \$7,265,200 appropriated for armor and armament under "increase of the Navy." Equipment costing \$3,878,300 and coal to the value of \$4,000,000 are allowed for the fleet; \$500,000 is the estimate for coal depots; and high-power radio-telegraph stations are allowed \$400,000. The Bureau of Yards and Docks receives \$1,500,000 for maintenance and \$4,623,300 for public works on shore. The construction and repair of ships covers items amounting to \$10,120,144. For steam machinery the appropriation is \$6,596,000. The Marine Corps is allowed \$7,425,978. The Naval Academy has an appropriation of \$580,020, with \$85,000 for buildings and grounds.

Estimates for 1914.—A special message of President Taft, dated Dec. 6, 1912, refers to the refusal of Congress to provide for more than one battleship, and recommends that "this Congress make up for the mistake of the last session by appropriations authorizing the construction

of three battleships," in addition to the 16 destroyers, six submarines, three gunboats, and eight auxiliaries of various types recommended by the General Board of the Navy. The Board's plan includes four battleships to take the place of those which should be withdrawn in 1914, and two battle-cruisers, with the proviso that no preference for these or other fleet units should be allowed to interfere with the ultimate battle strength. The Secretary of the Navy applies a similar proviso in regard to the construction of destroyers and submarines, holding them to be "of less military value than battleships," of which he urges that not less than 41 of this class should be supplied under a continuing annual building programme allowing for the replacement of obsolete battleships. The estimates for new construction and armament for the year ending June 30, 1914, exceed \$41,000,000, which is double the amount appropriated for the current fiscal year. This raises the total cost of the naval establishment to \$144,937,313, and there is a further recommendation for the allowance of \$6,526,445 for public works at the navy yards and stations.

Personnel.—An act providing that midshipmen should be commissioned ensigns upon graduation from the Naval Academy was passed in time to advance the class of 159 graduating in June, and the graduated midshipmen serving at sea were likewise promoted. The Naval Appropriation bill also provided for increasing the pay corps by 30 officers, of whom 20 were appointed in 1912. The appointment of 30 assistant dental surgeons, to be commissioned after 3 years' service, was sanctioned by Congress; and a medical reserve corps for the Navy was also sanctioned. For the Marine Corps 13 additional officers were authorized, along with an increase of 400 non-commissioned officers and privates. The total enlisted force of the fleet was increased by 4,000 men. Including the 3,500 apprentice seamen at the training stations, the aggregate enlisted force of the Navy as now authorized is 51,500. The line and staff of the Navy contain about 2,400 commissioned of-

ficers; and there are 645 warrant officers who receive commissions not in the line of promotion after six years' service, a privilege now extended to the corps of pharmacists. The Marine Corps has 347 officers for a force of 9,921 men, about 2,000 of whom serve in vessels of the fleet.

Navy Yards.—Congress has not dealt with the proposals of the Secretary of the Navy for the abolition of certain of the smaller yards, but work at the New Orleans and Pensacola yards has been stopped. It is still urged that the needs of the Navy require only one first-class yard north of the Delaware and one at Norfolk, each equipped for docking and repairing half the fleet; but the proposal to replace several existing navy yards by a central station in Narragansett Bay has made no progress. Meanwhile the Department is proceeding in its policy of concentration and readjustment by continuing the manufacture of ordnance at Washington and by making Philadelphia the base for the reserve fleet, Charleston becoming the principal base for torpedo craft, and Key West a minor base for destroyers and submarines. Guantánamo cannot now be equipped as a Caribbean naval base in time for the completion of the Panama Canal, but it will be maintained as a fleet rendezvous offering facilities for minor repairs.

In the Pacific the Puget Sound navy yard has been considerably developed by the completion of a dry dock capable of admitting any battleship yet designed; and Congress has authorized the equipment of a station for torpedo flotillas. Pearl Harbor, near Honolulu, has a dock which is to be lengthened at an expense which will make its total cost \$3,486,500. The locks of the Panama Canal, which are 1,000 ft. long and 110 ft. wide, furnish the standard; and the construction of one dock of these dimensions at the Pacific end of the Panama Canal has been authorized. A floating dock capable of lifting the largest naval vessel is also proposed. The dock of this type at New Orleans is not conveniently located; and the small floating docks at Pensacola and Olongapo are out of repair.

A committee of civilian experts in scientific management has reported that much of the work in progress in navy yards is inefficiently handled, and that when fully standardized it can be done for half the present labor cost. It is therefore recommended that officers should be trained to serve as scientific managers with as much care as is shown in developing specialists for designing ships and engines. The Navy Department has favored the adoption of the administrative system in use at the Vickers shipbuilding plant in England, and measures have been taken to apply it in the navy yards. The whole programme of scientific management, as elaborated in the so-called Taylor system, appears to be opposed by representatives of organized labor; and their criticisms have been stated at length on the floor of the House of Representatives by Frank Buchanan. The influence of organized labor may be traced in the provisions of the Naval Appropriation bill extending the eight-hour day to all contracts authorized for the increase of the Navy. The purchase of steel plates, armor, or machinery from any corporation which has conspired to monopolize trade has been forbidden since 1910; but the clause by which the crews of battleships laid up at any navy yard for repairs are prohibited from performing any duties except such as are or may be performed by them at sea or in a foreign port is a new restriction. The Secretary of the Navy had previously discussed the economy and other advantages of intrusting repairs to those who operate the machinery and are held responsible for results; and the sound practice of making repairs while cruising and avoiding the suspension of military activity due to detention at a navy yard may be extended by this legislative provision, particularly when the fleet has a due proportion of repair ships.

It is proposed to appoint a director of navy yards to supervise such methods of modern management as the Navy Department may see fit to adopt and to make comparisons of shop methods and costs in the different establishments. Requisitions for repairs to vessels of the fleet are

scrutinized by the aid for material, as well as by the chiefs of bureaus at the Navy Department; and notable economies of time and money are said to have been effected by this procedure.

Naval Education.—The Naval Academy graduated 159 midshipmen as ensigns in June, 1912; and the new fourth class admitted numbers 265. Altogether, there are nearly 800 midshipmen under instruction at Annapolis, with 100 officers assigned for their instruction and discipline. It has been urged that the entrance requirements should be made higher to correspond with those of most American colleges or that the course of instruction at the Naval Academy be extended by one year, not less than five years being required to teach the large number of subjects now included in the course. But no such change can be made without legislation. The development of post-graduate courses may, however, afford some relief to the present curriculum.

A class of 20 commissioned officers is detailed for post-graduate instruction in marine engineering at Annapolis; and an engineering experiment station is maintained in connection therewith. The design and operation of machinery for the fleet should receive benefit from this advanced instruction; and notable economies have resulted from the work of the experiment station. Similar classes in ordnance, electrical engineering, and radiotelegraphy, civil engineering, and naval construction are established in the post-graduate department of the Academy by an order of Oct. 31, 1912. Assistant naval constructors hitherto sent to the Massachusetts Institute of Technology for instruction, and the line officers now receiving instruction in ordnance at the Washington Navy Yard and at other manufacturing establishments may be transferred to Annapolis. The course lasts two years, and specialization is prescribed as soon as the officers have been well grounded in mathematics and physics.

Candidates who have been successful in the examinations for assistant surgeons are instructed at the Na-

val Medical School at Washington for one year before being detailed for naval duty; and senior medical officers are given opportunities to acquaint themselves with improvements in medicine and surgery at this institution.

The enlisted force of the Navy is instructed in various specialties at different navy yards. Seamen gunners take courses at Washington and at the torpedo station at Newport, 200 or more graduating each year. About the same number of electricians are graduated from New York and Mare Island. A class of machinists' mates is instructed at Charleston; and there are classes for naval clerks, or "yeomen," at other stations, each battleship requiring from 12 to 20 men of this class. Artificers, musicians, stewards, cooks, and bakers also receive instruction in regular courses.

CONSTRUCTION AND ARMAMENT

Estimates and Appropriations.—The recommendations of the General Board for a continuous naval policy like that of Germany and France have not found favor with Congress; and each year's estimates are liable to discussion and retrenchment by committees of the Senate and House of Representatives. Thus the Naval Appropriation bill passed in August failed to embody the proposal of the Secretary of the Navy to replace old battleships at the rate of two each year. A caucus representing a majority of the House voted against any appropriation for battleships; but the Senate adhered to the Navy Department's programme; and one battleship was accepted as a compromise. On the other hand, Congress authorized the construction of six torpedo-boat destroyers, eight submarine torpedo boats, and one tender for each of the preceding classes of torpedo craft, for which the Navy Department's estimates made no provision. The Secretary had pointed out the deficiencies of the fleet in these and other types of vessels; but for reasons of economy and to avoid interference with the battleship programme he had limited

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the estimates to two battleships and two fuel ships. The latter were granted; and against the retrenchment of one of the battleships the additional vessels authorized should be balanced. While the final cost of the authorized tonnage will exceed the Department's estimates, there is an apparent reduction in the appropriation for the increase of the Navy, which may be regulated by delaying certain disbursements.

Battleships and Battleship Cruisers.—The only vessel of either of the types known as capital ships authorized for 1913 is described in the same terms used in making appropriations for all recent battleships, but the limit of cost is raised from the \$6,000,000 of the last pair of battleships to \$7,425,000, exclusive of armor and armament. As both the latter are to be the heaviest known, the displacement of the *Pennsylvania* is to be 31,000 tons, and her total cost may be nearly \$15,000,000. Her length is to be 600 ft., with 97 ft. beam and 28½ ft. draft. The main battery of 12 14-in. guns is to be supplemented by four submerged torpedo tubes and by a torpedo-defense battery of 22 5-in. guns, the "all-big-gun" doctrine having been modified to that extent. The light guns will not be shielded, but the turrets, the belt protecting the water line, and the base of the single funnel are to be of the heaviest armor plates in use. The type of the main engines has not yet been announced; but it is proposed to provide for speed somewhat in excess of the 21 knots hitherto thought sufficient for our battleships. Oil is the only fuel to be used; and the boilers are to be of the water-tube type. This battleship will be built by contract in a private yard.

Of the battleships previously authorized, the *Arkansas* and *Wyoming*, begun in 1910, are now in commission. These vessels of 26,000 tons carry 12 12-in. guns in six turrets, and they are propelled by four-screw turbines of the Parsons type giving a speed of 22 knots on trials. For the *New York* and *Texas*, begun in 1911 and launched in the season of 1912, reciprocating engines with twin screws were adopted. These vessels

of 27,000 tons are the first to be armed with 14-in. guns, of which ten are mounted in four turrets. The former is the latest battleship to be built at a navy yard. The *Nevada* and *Oklahoma*, the contracts for which were awarded early in 1912, are of 27,500 tons, and their armament is the same as that of the *New York* and *Texas*. The *Nevada* is to have Curtis turbines, and her consort reciprocating engines; the boilers of both will be fired exclusively with oil, no coal being carried. Their armor protection is notably heavy and complete, the turrets and the water line having a thickness of 13½ in. and the belt being 17½ ft. wide in wake of the machinery. The contract speed of these ships is only 20½ knots.

The battleship-cruiser obtains high speed by sacrificing some part of the battery and armor of the battleship. Guns of the heaviest caliber are carried, but one or more turrets are dispensed with. A speed of 30 knots would enable one such vessel to sweep the ocean of all light craft of less speed, and also to take a place in the line of battle. The Secretary of the Navy recommends the construction of one vessel of this type each year, provided two battleships are also authorized.

Scouts and Cruisers.—The Navy has three scouts of recent design, but they are only of moderate speed, about 25 knots. One scout to each battleship is the standard of fleet organization; but the building of vessels of this type is likely to be postponed on account of the demand for battleships. The ten armored cruisers have an average displacement of 14,000 tons and a speed of 21 knots, the same as that of the battleships; but their main batteries are composed of 6-in. and 8-in. guns, and their armor protection is light.

Other cruisers have light batteries, little protection for their machinery, and moderate speed. None of them is fit for the line of battle, though one of them, the *Saratoga* (late *New York*), of 8,150 tons, has lately been repaired at an expense of over \$1,500,000.

Destroyers and Submarines.—Torpedoes are the principal armament

of these types, though the destroyers carry guns to repel torpedo boats, and the larger submarines are now armed. Torpedo boats are no longer built, all recent vessels armed with torpedoes now having enough tonnage for tactical efficiency at sea. For the eight destroyers of 1,010 tons' displacement now under construction the contract price averaged about \$750,000 for a speed of 29 knots. They are 300 ft. long; and oil is burned to give steam for their turbines. The six destroyers authorized by the appropriation bill for 1913 may cost as much as \$940,000 each; and this should allow increased speed and tonnage. For the eight submarine torpedo boats authorized for 1913, the aggregate appropriation is \$4,480,000; and the contracts awarded in 1911 averaged about \$500,000 for vessels of this type. Each year shows an increased cruising radius, both on the surface and submerged; and submarines should now be able to cross the Atlantic or cruise in the West Indies under their own power. Tenders for destroyers and submarines are now authorized and under construction, but no mine-laying vessels, such as are now attached to the British fleet, have been authorized for the Navy, though an old cruiser has been equipped for this work. Submarines may be able to handle mines, now that they can make runs of several hours under water and can be submerged to a depth of 200 ft. with a full crew on board.

Colliers and Fuel Ships.—Two fuel ships to cost \$1,140,000 each when built in navy yards, one of them on the Pacific coast, were authorized by the Naval Appropriation bill. It is expected that each of them will carry about 15,000 tons of coal or 1,000,000 gal. of oil for the fleet. There are five similar vessels under construction, and some of them are fitted with machinery of novel design for experiment. The geared turbines of the *Neptune* now give good results; and the *Jupiter* is to be fitted for electric propulsion. The dimensions and equipment of these vessels enable them to coal a battleship at sea at the rate of 400 tons an hour.

Coal and Fuel Oil.—The Navy consumes about 750,000 tons of coal in a year, half of it in actual cruising; and the cost averages less than \$4.00 per ton. To reduce the expense of shipping coal to the Pacific it has been necessary to make contracts with foreign vessels in some cases. The coal mined in Washington has been tested for steaming purposes; and it is proposed to investigate the coal fields in Alaska with a view to naval requirements. The President has set apart for naval uses 37,000 acres of oil lands in California. The estimated yield of this tract of public land should be sufficient to supply the fleet for 25 years with the 10,000,000 gal. of oil which it may consume annually when oil becomes the principal source of motive power.

Guns and Armor.—All recent tests have shown that the latest guns have a decided advantage over any armor carried by the battleships now in service, even with ranges up to five miles. Increased calibers and high explosives make the results of penetration disastrous; and the testing of armor carried out during the last three years by making the *San Marcos* (formerly the *Texas*) a target seem to have brought about a decision to supply heavier plates for our latest battleships. Krupp plates 13½ in. thick have not hitherto been fitted to foreign vessels; but contracts have been made for supplying them to the latest American battleships. Two protective decks are also fitted in the *Nevada* and *Oklahoma*, each of which will carry 1,000 tons more armor than the *New York* or *Texas*. The contract price for 1912 is \$420 per ton; and American manufacturers have supplied plates to the Italian Government at that price.

Along with heavier armor there has been a proportionate increase in the caliber of guns. Several nations have gone beyond the 12-in. batteries of the *Dreadnought*: England has several ships of that type armed with 10 13½-in. guns; but the *New York* and *Texas* will be the first to carry a 14-in. battery. Larger calibers are the subject of experiment; and the Bureau of Ordnance has a 16-in. gun in hand. The reason for this advance appears from a comparison

of the muzzle energy of the 12-in. gun with its 870-lb. projectile and the 14-in. with one of nearly 1,400 lb., the initial power being 49,000 and 63,000 ft.-tons, respectively, and the heavier shell being far more effective against armor at the ordinary battle ranges of three to five miles. All heavy guns are now mounted in double or triple turrets, of which two or more are elevated for fore and aft fire. Arrangements in echelon are going out of use. The *Arkansas* has six turrets on a central line, giving her the full power of all her 12-in. guns on either broadside; and this grouping is maintained in all the new American designs.

Special weapons for use against aeroplanes have been tested; and the Davis torpedo-gun for firing an underwater shell when the flight of an automobile torpedo is arrested has attracted much notice in Europe and America. Such a device would seem to render the nettings for torpedo defense, now carried by British and German battleships, of slight account. The new torpedoes, for which there is an annual appropriation of \$850,000, are constantly increasing in range and accuracy: the 21-in. type supplied to battleships retains a speed of 30 knots after running three miles; and the smaller types carried by destroyers and submarines are also effective at long range.

THE FLEET

Commands Afloat.—The Atlantic Fleet has been under the command of Rear-Admiral Hugo Osterhaus throughout the year; but it is announced that he is to be relieved by Rear-Admiral C. J. Badger in January, 1913. The divisions are commanded by Rear-Admirals B. A. Fiske, N. R. Usher, C. McR. Winslow, and F. F. Fletcher. Captain E. W. Eberle commands the torpedo flotilla. The Pacific Fleet has Rear-Admiral W. H. H. Southerland as commander-in-chief; and Rear-Admiral R. F. Nicholson commands the Asiatic Fleet. The Atlantic Fleet contains all the battleships in cruising commission, the number varying from 18 to 24; and there are 20 destroyers in the torpedo flotilla. The

fleet auxiliaries number nine; and the submarine flotilla of six vessels is under a separate command. The Pacific Fleet is made up of four armored cruisers; and a group of five destroyers and another of a tender and three submarines make up the Pacific torpedo flotilla. The Asiatic Fleet has 14 cruisers and gunboats of various types and a flotilla of six destroyers and four submarines, besides several auxiliaries.

Reserve Fleet.—As constituted by an order of Feb. 16, 1912, this force will be kept ready for sea as far as stores and repairs are concerned; but the complement of officers and men on board will be only about one-fourth of that of ships in active commission. There are now in this first reserve ten battleships, four armored cruisers, and three scouts. Other vessels may be added when their repairs are completed; and any of the vessels of the Reserve Fleet may have their crews increased and be detailed for active service on occasion. Instead of the hulks formerly assigned as receiving-ships at navy yards, vessels of the reserve now receive recruits. The Atlantic Reserve Fleet is commanded by Rear-Admiral A. M. Knight. Rear-Admiral A. Reynolds has been detailed for the Pacific Reserve Fleet, which consists of one battleship and six cruisers. Most of the reserve ships are of obsolescent type; but several of the battleships have been extensively repaired, and are doubtless fit for the line of battle.

Operations.—In addition to the cruises of instruction, the target practice, and the regular competitive exercises, the fleet has furnished detachments of seamen and marines for special service in both the Atlantic and Pacific. Battalions of marines have been sent from the naval stations at home to aid in suppressing insurrections in Cuba and Nicaragua (see III, *International Relations*). In the latter country Rear-Admiral Southerland has employed nearly 2,000 men in opening communication with Managua and Granada. In Sept., 1912, other detachments of marines were sent to guard certain custom-houses in the Dominican Republic from insurgent raids;

and the harbors of the Republic are under the protection of gunboats or cruisers. The completion of the Chinese revolution has justified the relief of the forces employed in defense of American interests in China; but vessels are still kept in Chinese waters. Two armored cruisers sailed in November for the Levant, to protect American interests while Turkey was involved in war.

Target Practice and Engineering Competitions.—The routine for the qualification of gun-pointers requires target practice at ranges of about 2,000 yd., where all hits can be scored on the target. Battle practice requires ranges of five miles or more, and firing is carried on under cruising conditions. Several battleships have been allowed to fire at the *San Marcos*, the hull of which has been equipped to test different designs for armor and other appliances. Tests seem to have justified the retention of the cage masts peculiar to American battleships, one of these skeleton structures having endured the shock of a salvo of heavy shell without destroying its fitness for a fire-control station. In battle exercises the ranges are unknown until they can be picked up by range-finders and checked by the sight-bars of the guns.

For 1912 the *Delaware*, Captain John Hood, was credited with the highest percentage for "battle efficiency," and her commanding officer was specially commended therefor by the President. The *Colorado*, Captain W. A. Gill, won the gunnery trophy of the battleship class; and the *Maryland*, Captain J. M. Elliott, stood first in the engineering competition. Of the destroyers, the *Preston*, Lieutenant H. F. Leary, was first in battle efficiency; and the *Burrows*, Lieutenant J. F. Hellweg, was first in the engineering competition. The competition of the cruisers placed the *Albany*, Commander M. L. Bristol, first; and the *Mayflower*, Lieutenant-Commander P. Symington, was placed at the head of the gunboats.

Naval Review.—The Atlantic Fleet was collected at New York in October, as in 1911; and, with the addition of reserve ships and others

of special classes, the total number under the command of Rear-Admiral Osterhaus was 115. Of these, 31 are battleships, including ten from the reserve; four are armored cruisers of the reserve; there are 24 destroyers, 12 torpedo boats, ten submarines, eight fuel ships, six naval militia vessels, and 20 vessels of special type. The total tonnage is 720,486, of which 478,508 belongs to the battleships. At the conclusion of the exercises on Oct. 15 the fleet steamed past the *Mayflower*, which bore the flag of the President, and proceeded to sea. The Secretary of the Navy ordered the fleet to visit the Isthmus in succession so that the crews might inspect the Panama Canal before coming north for the Christmas holidays.

COMPARISON WITH FOREIGN NAVIES

Estimates and Programmes.—A continuous policy in regard to fleet development has been adopted by several of the powers: Germany has a navy law providing for the construction of 41 battleships, 20 armored cruisers (many of them battle-cruisers), 40 cruisers, 144 destroyers, and 72 submarines. Japan has provided \$78,837,591 to be expended in six annual instalments prior to 1917. Russia and France have similar plans; and a Franco-Russian convention regarding naval force is said to have been arranged. Austria and Italy have naval programmes for six years in advance. Great Britain has built according to "a two-power standard" for a generation; but the present plan is to exceed the progress of the most formidable competitor by 60 per cent. Successive amendments to the German navy law have been met in that spirit; and the Admiralty was granted £44,000,000 for 1912-13, the laying down of five battleships and an increase of 3,000 men being thus provided for. The Navy League in England advocates a larger and more definite programme pointing out that all pre-*Dreadnought* battleships should go out of account by 1914 and suggesting an annual appropriation of £15,000,000 up to 1920 for the construction of

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five battleships or armored cruisers each year. The Admiralty programme falls little short of this in view of the calculation that Germany will have 29 ships of the *Dreadnought* type in the North Sea by 1914, when, if circumstances compelled the detachment of the Mediterranean squadron of eight battle-cruisers, England would have only 33. Great Britain is now able to count on naval reinforcements from the colonies. Australia has a comprehensive programme, and Canada proposes to present to the Mother Country three battleships to cost \$35,000,000. (See also IV, *Foreign Affairs*.)

Expenditures.—The following table shows the sums appropriated for naval purposes for the last complete fiscal year and the rate of increase in ten years:

NATION	Appropriations, 1911-12	Per cent. Increase since 1902
Great Britain.	\$216,036,101	27
United States.	129,278,167	74
Germany.	107,232,000	119
France.	80,371,109	37
Austria.	25,000,000	163
Italy.	46,751,552	73
Japan.	42,944,329	137
Russia.	88,633,045	27

The total increase in the consolidated expenditures of the powers in ten years amounts to 56 per cent.

Sea Strength.—The attempt to compare the effective force of navies by tables of tonnage is apt to be misleading. Obsolete vessels may serve

to inflate the lists in some cases; and superiority of speed, armor, and guns is not recognized. On the other hand, the lists which show the number of vessels of different types may be subject to misinterpretation. It is doubtful whether all the pre-*Dreadnoughts* should be "scrapped," that is, sold to be broken up, by 1914; and the tactical quality of a fleet of super-*Dreadnoughts* remains to be tested. All methods of comparison, however, agree in placing Great Britain in a position to maintain the two-power standard, or at least the 60 per cent. advantage over the nearest competitor. Germany attains the second place this year, the United States Navy becoming third.

The following lists count as *Dreadnoughts* all battleships armed with a main battery of eight or more guns 11 in. or more in caliber; and battle-cruisers are provided with similar batteries. Other battleships of 10-000 tons or more are counted separately, the fact that they have only four guns of heavy caliber lowering their classification. Auxiliaries are not counted; and all obsolete and unseaworthy vessels are stricken from the lists, 20 years being regarded as the life of all vessels not recently rearmed and reconstructed—a proviso which keeps the oldest American battleships on the list. These tables were prepared by the Office of Naval Intelligence at Washington on Dec. 1, 1912.

NUMERICAL STRENGTH OF THE PRINCIPAL NAVIES

	Battleships, <i>Dreadnought</i> type	Battleships	Battle- cruisers	Armored cruisers	Cruisers	Destroyers	Torpedo boats	Submarines	Coast-defence vessels
VESSELS BUILT:									
Great Britain.	16	40	7	34	73	140	49	70	0
Germany.	10	20	3	9	38	119	9	26	3
United States.	8	25	0	11	15	42	20	23	4
France.	0	20	0	21	10	75	157	76	2
Japan.	2	13	0	13	14	58	54	11	2
Russia.	0	8	0	6	9	93	14	31	2
Italy.	1	8	0	9	5	21	48	18	0
Austria.	1	6	0	3	4	12	40	6	6
VESSELS BUILDING:									
Great Britain.	9		4		17	44	0	16	
Germany.	7		3		5	12	0	6	
United States.	5		0		0	14	0	24	
France.	7		0		0	9	0	13	
Japan.	1		4		0	0	0	5	
Russia.	7		4		0	9	0	8	
Italy.	7		0		2	11	21	2	
Austria.	3		0		3	6	12	7	

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RELATIVE ORDER OF WARSHIP TONNAGE

PRESENT ORDER (TONNAGE COMPLETED)		AS WOULD BE THE CASE WERE VESSELS BUILDING NOW COMPLETED	
Nation	Tonnage	Nation	Tonnage
Great Britain.....	1,978,212	Great Britain.....	2,478,152
Germany.....	837,982	Germany.....	1,124,257
United States.....	773,107	United States.....	898,345
France.....	630,769	France.....	806,729
Japan.....	471,558	Japan.....	613,724
Russia.....	286,930	Russia.....	459,207
Italy.....	224,837	Italy.....	416,310
Austria.....	178,149	Austria.....	280,751

Ordnance.—The heaviest guns yet mounted afloat are those of the British battleships and battle-cruisers of the *Dreadnought* type completed since the beginning of 1911. These guns of 13.5 caliber are so mounted that all of them can be fired on either broadside; and the simultaneous discharge of the whole battery of ten guns does not affect the structure of the ship or the turrets in which they are mounted. Larger calibers are the subject of experiment in Germany as well as in England; and it is claimed that the German Krupp guns will endure many more fires than the English wire-wound guns without the necessity of retubing. Among the novelties of the year is the Lewis automatic cannon for attacking aeroplanes (see XII, *The Army*). The Davis torpedo gun has attracted considerable notice when tested in Europe. In spite of the progress of heavy ordnance afloat, it is argued by some experts that the 12-in. gun is powerful enough to penetrate any armor afloat, and that increased calibers are unnecessary.

Maneuvers and Reviews.—Notable reviews are held each year by the German Emperor, the King of England, and the President of France. The British Naval parade in the North Sea, which was followed by the working out of a strategical problem by two divisions of the fleet, arrayed the most powerful armament on record. The total of 239 vessels included 42 battleships, five battle-cruisers, 26 armored cruisers, 21 other cruisers, 107 destroyers, and 19 submarines, besides various auxiliaries, among which fuel ships were not counted. No less than five Vice-Admirals and 15 Rear-Admirals had commands afloat on this occasion; and 88,000 men, nearly two-thirds of the enlisted force of the British navy, manned the ships. The modern practice is to keep all vessels of the first line in full commission, with one-quarter of the regular crew for each vessel of the reserve. This gives nearly all the 138,000 officers and men constant training at sea. The same advantage is enjoyed by the 70,000 seamen of the German fleet.

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XIII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

S. S. HUEBNER

BUSINESS CONDITIONS IN 1912

A Year of Improving Business.—In the year 1910 and 1911 issues of the **AMERICAN YEAR BOOK** it was explained that during these two years dullness and hesitation characterized most important lines of business, and that especially during 1911 there was a declining tendency in trade and commerce and in security values. As stated in the 1911 issue of the **YEAR BOOK** (p. 271), the business situation could not be characterized as a "business depression," but rather as a situation where "business was marking time while awaiting developments, and where business men showed little inclination to take the initiative in confidently purchasing goods on a larger scale, or otherwise extending the field of their operations."

During 1912, despite the continuance of high prices and the uncertainty and agitation connected with a presidential campaign, greater initiative was shown on the part of business men in purchasing materials, and improvement is noticeable in nearly all lines of business, although the extent of that improvement can by no means be described as a boom. In the main the year 1912 was one of normal business with a tendency toward improvement, and with business men optimistic as regards the future.

Much of this improvement in business must be attributed to the splendid agricultural crop, which established records in nearly all the important cereals, and even in the case of wheat and cotton, where the year's

crop was exceeded by that of other years, the yield was satisfactory. In the iron and steel business, the next most important index of business activity, the output was greatly increased, and the orders coming in toward the close of the year were equal to the producing capacity of the plants. The copper business likewise showed great improvement, the visible supply of the metal greatly decreasing, despite increased production, while the price of the metal at the same time increased over 30 per cent. Railroad traffic was large, although the high cost of materials and increasing wages did not augment the net earnings of the roads, as compared with the increase in gross earnings. Exports and imports reached record proportions during nearly every month of the year, and navigation companies were in a position to charge higher rates than for a long time past. Building operations also compared favorably with former years, and incorporations were also on a larger scale than in 1911. In fact, business improvement is noticeable along all the leading lines of business except one, viz., the security market. This market, as was the case in 1911, was exceptionally dull at times for reasons to be mentioned later; yet even here it should be noted that bond prices declined but slightly as compared with 1911, while in the case of stocks 1912 showed an improving tendency in prices as contrasted with the severe liquidation in the stock market of 1911. Money rates, also, as regards

both call and time loans, reflected a greater demand than in 1911.

Statistics.—In the tables on the following pages a summary is presented of business conditions during the years 1911 and 1912, as shown by those indices which are generally accepted as the truest barometers of industry and trade. The tables relating to "Stock Market Activity" and including a summary of "Shares of Stock and Bonds Sold," "Average Security Prices," and "New Securities Listed," furnish an idea of the activity that prevailed in the security market, and the condition of the investment demand during the year 1912. The tables relating to "Loans and Deposits of the New York Clearing House Banks" and the "Domestic and Foreign Money Rates" will explain the conditions surrounding the money market during 1912; while the tables on "Bank Clearings," "Foreign Trade," "Crop Production," "Railway Gross and Net Earnings," "Idle Cars," "Pig Iron and Copper Production," "Building Construction," and "Number of Business Failures and Amount of Liabilities," will furnish a view of the year's activity in mercantile and manufacturing lines. For purposes of comparison, the data for these barometric in-

dices are given by months for the years 1911 and 1912, and to make possible a further comparison, the totals for the several items, wherever possible, are also given for the years 1908, 1909, and 1910.*

AGRICULTURE

Crop Production.—Official reports for the month of October disclosed a highly satisfactory crop situation, and, as regards the five leading cereals, indicate a yield for the year of 5,413,000,000 bus. as compared with only 4,268,000,000 bus. in 1911 (an increase of 1,145,000,000 bus.), and 4,916,000,000 bus. in 1910. It is significant that the showing in every important crop is satisfactory, and that the largely increased production is not due in any important degree to an increase in acreage. Instead, the Government's figures show a total of only 200,600,000 acres devoted to cereal production in 1912, against 202,885,000 acres in 1911. The wheat area in 1912 was actually less than a decade ago. As pointed out in one leading journal, "the agricultural prosperity of 1912 is to be ascribed entirely to an all-favoring Providence and not to any efforts of the farmers to keep pace with the needs of our growing population."

CROP PRODUCTION

	1908	1909	1910	1911	1912 ¹
Corn.....bus.	2,668,651,000	2,772,376,000	3,121,381,000	2,759,300,000	3,016,000,000
Winter wheat....."	420,218,000	432,920,000	458,294,000	455,149,000	390,000,000
Spring wheat....."	214,384,000	290,823,000	233,475,000	200,367,000	330,391,000
Oats....."	807,156,000	1,007,353,000	1,096,396,000	873,641,000	1,417,172,000
Rye....."	31,851,000	30,239,000	32,088,000	30,877,000	35,422,000
Barley....."	166,756,000	173,284,000	158,138,000	145,951,000	224,619,000
Cotton.....bales	13,825,457	10,609,668	11,500,000	14,000,000	13,000,000

¹ October estimate; the December estimate is given under XIX. *Agricultural Statistics.*

The aggregate corn crop is estimated at 3,016,000,000 bus., representing an average yield per acre for the whole country of 27.9 bus., or the heaviest since 1906, being exceeded only five times, and then but slightly, during the last quarter of a century. The crop exceeds the very poor crop of 1911 by 485,000,000 bus. Similarly the indicated yield of spring wheat is 17.2 bus. per acre, compared with only 9.7 bus. in 1911 and 11.7 bus. in 1910, or the highest on record, with the single exception of 1895. The total yield

of spring and winter wheat combined is estimated at 720,391,000 bus., or nearly 100,000,000 bus. in excess of the 1911 yield.

In all the other important cereal crops the showing is most encouraging. The yield per acre in oats is

* The author is indebted for many of the statistics presented in the tables following to the monthly compilations prepared from authentic sources by Roger W. Babson, and issued periodically in "Babson's Desk Sheet of Tables on Barometric Figures for Business Conditions."

placed in the October report at the record figure of 37.4 bus., indicating a yield of over 1,417,000,000 bus., as compared with only 922,000,000 bus. in 1911, and 231,000,000 bus. in excess of the previous high total in 1910. The estimated yield of barley is 224,619,000 bus., or an increase of 50 per cent. over the 1911 crop, and 70,000,000 bus. in excess of the ten-year average. Potato production exceeds the ten-year average by nearly 100,000,000 bus. and will be the largest crop on record, and the hay yield totaled 72,425,000 tons, compared with only 46,969,000 tons in 1911, and a ten-year average of only 61,500,000 tons.

Cotton Production.—As regards cotton alone, the showing is poorer than last year, yet the crop must be considered as fairly satisfactory. The October condition of the crop is placed at 69.6, as compared with 71.1 for the bumper crop of 1911. This condition is slightly in excess of the ten-year average, and while the estimated acreage is about 2,500,000 acres less than last year, the estimated yield is nevertheless placed at 13,000,000 bales, compared with 14,775,000 bales in 1911.

Prices.—The largely increased yield in all the leading crops, except cotton, has had a material effect upon current prices. At the time of writing, December wheat on the Chicago Board of Trade is quoted at 93½ cents, compared with 99¼ cents a year ago and a previous October high of \$1.07½ in 1909. Chicago December corn is quoted at only 53½ cents, compared with 64½ cents a year ago and a previous October high of 66½ cents in 1911. New York December cotton, however, is quoted at 10.60 cents, compared with 9.58 cents a year ago and a previous October high of 13.55 cents in 1910.*

* For the reasons mentioned in the text, a considerable further revision of prices has occurred along the lines indicated. On Dec. 21 the price of December wheat closed in Chicago at 86½, as compared with 93½ cents at the time the above lines were written. On the same date, December corn closed at 48½ cents, as compared with 53½ cents. New York December cotton, however, closed at 12.65 cents, as compared with 10.60 cents in October.

IRON AND STEEL TRADE

Improving Conditions.—As explained in last year's YEAR BOOK (p. 276), the output of the iron and steel business during 1911 was most unsatisfactory, owing to the effort of railroad companies to restrict expenditures for equipment, renewals and new construction, and the general dullness of business, especially as regards equipment companies. During the last three months of 1911, however, and to an increasing extent during 1912, the iron and steel business, considered an excellent barometer of business activity, has shown remarkable improvement when compared with the tonnage produced in 1910 and 1911. As stated by the *Commercial and Financial Chronicle* (Aug. 3):

As far as the half-year's production is concerned, it is only needful to say that the figures reflect the steadily developing activity which has been in progress the present year in the iron and steel industry. The make of iron for the six months ending June 30, 1912, is found to have been 14,092,274 tons, compared with only 11,686,996 tons made in the first half of 1911 and with only 11,982,551 tons produced in the second half of 1911. The output for the first half of the current year was at the rate of 28,000,000 tons a year, while the production in the calendar year 1911 was only 23,649,547 tons. Even as the figures stand, however, the 1912 output is not up to the maximum of the best previous years.

It should be added that nearly every month's production during 1912 exceeded the production of the preceding month. During January, 1912, the production amounted to 2,057,000 tons, compared with only 1,759,000 tons in January, 1911. By June, 1912, the production had increased to 2,410,000 tons a month, and during August to 2,512,000 tons. This revival in the iron trade is traceable to the increased business prosperity of 1912, but received its first stimulus from the slump in prices occurring a little over a year ago. Prior to this decline, prices had been held firmly, and buyers of iron feared a decline in prices with the consequent wiping out of profits. The demand

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for iron, therefore, dwindled, but with the drop in prices, and the resulting impression that an open market existed in iron and steel products, orders came in from all classes of buyers. In October, pig iron Northern was quoted at \$17.75, compared with \$15.38 a year ago and a previous October high of \$19.75 in 1909. Towards the close of December, pig iron Northern was quoted at \$18.88, as compared with \$17.75 in October and a previous December high of \$19.25 in 1909.

The Steel Trade.—In October the press was referring to the congested condition of the steel mills. Reports indicate that during the first ten months of the year the railroads placed orders for equipment calling for 7,725,000 tons of steel products, or an amount estimated to be equal to the combined orders placed in 1910 and 1911 with nearly 1,500,000 tons to spare. During this time, it is reported, builders took orders for over 200,000 cars and orders for 40,000 more were pending. Orders for rails since January, 1912, reached 3,950,000 tons during the first ten months of the year. The demand from other consumers has also been noteworthy, especially during the first six months of the year, when manufacturers, outside of those catering to the railroads, were the first

to take advantage of low prices for all kinds of finished material.

The condition of the steel business is usually judged by the statements of "unfilled tonnage" issued monthly by the United States Steel Corporation. On Oct. 31, 1912, this company reported unfilled tonnage of 7,594,381 tons, as compared with only 3,694,328 tons on the same date in 1911. This amount is a gain of 1,042,000 tons in a single month, the amount of orders on Sept. 30 having been 6,551,375 tons. It is also worthy of note that with the exception of one month, the orders for each month show an increase over the preceding months. According to one authority commenting on the October statement, "there is already the anticipated difficulty of obtaining shipments on contracts, already a retarding influence, because of the oversold condition of the mills. The probability is that the congestion of the Steel Company's order books will not be relieved for many months to come. In fact, each month's business during the last four months has been in excess of the producing capacity of the mills." For the month of November the Steel Corporation's monthly report of unfilled tonnage indicated a net increase of 258,502 tons, thus showing a further extension of the large gains of previous months.

PRODUCTION OF IRON AND COPPER

	PIG IRON, Tons		COPPER, Production, Pounds		COPPER, Visible Supply	
	1912	1911	1912	1911	1912	1911
January.....	2,057,000	1,759,000	119,337,000	115,696,000	89,454,000	122,030,000
February.....	2,100,000	1,794,000	116,035,000	109,825,000	66,280,000	142,439,000
March.....	2,405,000	2,188,000	125,694,000	130,532,000	62,939,000	156,637,000
April.....	2,375,000	2,065,000	125,464,000	118,035,000	62,367,000	162,007,000
May.....	2,512,000	1,893,000	126,737,000	126,962,000	65,066,000	165,555,000
June.....	2,440,000	1,787,000	122,315,000	124,544,000	49,615,000	165,995,000
July.....	2,410,000	1,793,000	137,161,000	112,167,000	44,335,000	157,434,000
August.....	2,512,000	1,926,000	145,628,000	125,493,000	50,280,000	137,738,000
September.....	2,463,000	1,977,000	140,089,000	115,588,000	46,701,000	133,441,000
October.....	2,689,000	2,102,000	145,405,453	118,255,000	63,065,000	140,894,000
November.....	2,630,000	1,999,000	134,695,000	111,876,000	76,744,964	134,997,000
December.....		2,043,000		122,896,000	86,164,000	111,785,000

COPPER TRADE

In the copper business the year 1912 shows great improvement over the years 1910 and 1911, because, despite increased production, the American visible supply was greatly decreased, and the price for the

metal greatly improved. Thus, while the production of copper during the first eight months of 1911 was only 962,000,000 lb., the output of copper during the corresponding months of 1912 totaled 1,018,000,000 lb. In the meantime the visible supply of copper for the United

States, which reached 166,000,000 lb. in June, 1911, was steadily reduced, until in January, 1912, it was only 89,454,000 lb., and by September, 1912, had been reduced to the low figure of 46,701,000 lb. This large decrease is traceable both to an increase in exports and domestic consumption. Moreover, during 1911, the price of copper ranged from only 11½ to 13¼ cents per pound, whereas in October, 1912, electrolytic copper was quoted at 17.5 cents, as compared with 12.23 cents a year ago, and a previous October high of 21.20 cents in 1906. The effect of increased production and the improving price of the metal upon the value of copper stocks is well illustrated by the fact that, whereas the average price for 20 active copper stocks was only 30.8 at the beginning of November, 1911, the average price for the same active stocks was 48.7 in October, 1912.

While the price of copper toward the close of December was about the same as during October, a very considerable decline has occurred in the price of the leading stocks. Since October the price of 20 active copper stocks has declined from an average of \$48.7 to an average of \$41.4, this decline being partly due to a more unfavorable tendency in the visible supply statistics, indicated in the table, and partly to the general depression of the stock market during the month of December (see note to "The Securities Market," *infra*).

FOREIGN TRADE

The foreign trade returns for the year ending June 30, 1912, as furnished by the United States Government, show an enormous increase in both exports and imports and make the year a record one. Imports and exports combined aggregate \$3,857,000,000, exceeding the trade in 1910-11 by \$281,000,000. Exports total \$2,204,222,088, or \$155,000,000 over 1910-11, and it is noteworthy that 1911 showed an increase of \$270,500,000 over the preceding year. Imports amounted to \$1,653,426,174, against \$1,527,226,105 in 1910-11, thus leaving a net trade balance of \$550,795,914 in 1911-12, as compared with \$522,094,000 in 1910-11.

An examination of these enormous trade returns shows that high prices have not figured in the expansion to any material degree. In fact, as regards cotton, the contrary is shown, since the quantity increased in much greater proportion than the value, the exports amounting to 1,500,000,000 lb. in excess of 1910-11, although representing a value of nearly \$19,000,000 less. A further examination of the figures shows that with the exception of four months the exports of commodities exceeded in value the exports of the corresponding period of the previous year. The imports fell behind the previous year's totals in only August and December, and the net balance in our favor is larger than in any fiscal year since 1907-08, when the volume of imports greatly decreased, owing to our commercial depression. On only two other occasions, 1900-01 and 1897-98, was the trade balance greater than the balance of 1912.

In last year's *YEAR BOOK* (p. 277) it was stated that the exports of manufactures increased nearly \$143,000,000 over the record year of 1910, and that such exports have nearly doubled in value during the last ten years. The figures for 1912 show this same tendency for exports of manufactures to increase more rapidly than the exports of other articles. Thus the shipments of breadstuffs, while about the same as in 1910-11, were smaller than in any year since 1894-95. Exports of breadstuffs, cotton, provisions, and petroleum aggregated \$959,600,000, or only about \$2,000,000 more than in 1910-11, thus leaving \$1,245,000,000, or \$153,000,000 more than in the preceding year, as the value of exports of other commodities. According to the *Commercial and Financial Chronicle*, "iron and steel manufactures record an increase of approximately \$33,000,000; copper and manufactures 10 million, vegetable oils 8 million, automobiles a like amount, oil cake 9 million, coal 7 million, with similar gains in cars, chemicals, fruits and nuts, leather and manufactures, tobacco, and wood and manufactures." (See also XXII, *Trade, Transportation, and Communication*.)

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The general showing for the fiscal year 1911-1912 has been continued since June. Thus, for August, exports amounted to 167 millions as against 144 millions in 1911, and 134 millions in 1910. While the exports of breadstuffs fell below 1911, the

exports of other commodities, especially manufactures, increased 26½ millions over August, 1911, and nearly 34 millions over August, 1910. In both October and November new record figures for exports were established.

FOREIGN TRADE

	IMPORTS		EXPORTS		BALANCE OF TRADE ¹	
	1911	1912	1911	1912	1911	1912
Jan....	\$130,561,234	\$143,586,408	\$197,083,391	\$202,446,273	+\$66,522,157	+\$58,859,865
Feb....	121,694,740	134,188,438	175,957,305	198,844,326	+ 54,262,565	+ 64,655,888
March..	139,041,928	157,577,038	161,933,204	205,411,462	+ 22,891,276	+ 47,834,424
April...	119,826,706	162,571,159	158,011,250	179,300,342	+ 38,184,544	+ 16,729,183
May....	130,824,241	155,697,886	153,169,058	175,380,058	+ 22,345,454	+ 19,682,172
June...	122,537,184	131,030,797	141,706,737	138,233,742	+ 19,169,553	+ 7,202,945
July....	118,178,356	148,677,738	127,708,244	149,021,133	+ 9,529,888	+ 343,395
Aug....	125,827,112	154,933,770	144,241,515	167,844,871	+ 18,414,403	+ 12,911,101
Sept...	125,158,108	144,862,343	195,771,502	199,701,652	+ 70,613,394	+ 54,839,309
Oct....	132,605,751	177,995,830	210,365,516	254,696,985	+ 77,759,765	+ 76,791,155
Nov....	126,162,022	153,134,995	201,752,760	277,898,681	+ 75,590,738	+ 124,763,686
Dec....	140,674,202		224,907,136		+ 84,232,934	
Total..	\$1,532,359,160		\$2,092,526,746		\$560,167,786	

¹+ = balance of exports; — = balance of imports.

BUILDING OPERATIONS

The volume of building operations in 1912 compares favorably with the year 1911, but does not show a large increase. The September, 1912, returns of the *Commercial and Financial Chronicle* for 134 cities furnish the best summary of activity along this line. In presenting this summary for the month of September, and the first nine months of the year, the following statement is made:

The month's total falls below that of last year; the year's to date is moderately in excess of 1911 and greater than for any earlier year. For the nine months of 1912 the anticipated outlay at the 134 cities is, according to our compilation, a little more than 741 million dollars, as against 715 millions in 1911 and 682 millions in 1910. For Greater New York the respective figures are 176½ millions, 152½ millions and 162 millions, and for the other cities collectively 565 millions, 562 millions and 520 millions. The results in the various sections of the country, likewise, are quite encouraging. Twenty-one New England cities show an aggregate gain over 1911 of 9 million dollars, 13 on the Pacific Slope, an increase of over 10 millions, 24 in the South, an augmentation of a little less than a million; and, notwithstanding less activity this year at such important points as Philadelphia, Washington, Baltimore, Syracuse and

Troy, the decline from a year ago for the 30 cities (not including New York) that make up the middle section is barely three-quarters of a million. In the Middle West (24 cities) a loss of 8 millions is shown, but excluding Chicago (where operations were inordinately swelled last year in August to get the advantage of an old building law), a gain of 7 millions is seen. The loss of 3½ millions in the "other western" section (21 cities), moreover, is more than accounted for by the special operation in 1911, to which reference has already been made.

BUILDING CONSTRUCTION (20 Cities)

	1911	1912
January.....	\$34,472,706	\$27,623,326
February.....	27,169,375	31,303,094
March.....	51,022,522	49,666,896
April.....	54,315,271	65,012,412
May.....	42,664,880	59,434,953
June.....	56,319,783	57,545,437
July.....	49,924,880	48,261,154
August.....	63,123,423	52,038,639
September.....	46,562,982	36,827,818
October.....	40,657,428	
November.....	37,929,447	
December.....	33,609,940	

BUSINESS FAILURES

Commercial failures during 1912 compare unfavorably with the year 1911. For the first nine months of the year, according to the reports of R. G. Dun & Co., the number of failures reached 11,816, against 9,944 in 1911 and 9,399 in 1910, and the indebtedness amounted to \$153,-

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544,360, against \$138,865,620 and \$154,417,304. The worst showing is found in the East and South, where large increases occurred, while in the Central East, Central West and western states decreases are exhibited. Many of the failures are attributed to high cost and reduced consumption of the articles involved, thus causing loss of business and enforced insolvency. Too much importance, however, should not be attached to the increased number of failures. In reviewing the results of the nine months, in relation to the improved business conditions, R. G. Dun & Co. give this explanation:

An examination of the failure record as a whole shows that, large as was the increase in the number of defaults, the increase in amount of liabilities was even relatively greater, the average liabilities per failure being larger in the nine months of 1912 than in the nine months of 1911. There is very little in the failure statistics for the past nine months that discloses the unmistakable improvement in business conditions which has taken place in that period, and the proofs of that improvement are so overwhelming that the increase in number and amount of failures during the past nine months can only be attributed to passing conditions and are not significant as to conditions which may be expected to prevail in the future.

BUSINESS FAILURES

	LIABILITIES		NUMBER	
	1911	1912	1911	1912
January.....	\$27,273,559	\$19,853,501	1,519	1,799
February.....	14,193,169	18,253,558	1,105	1,373
March.....	17,371,631	19,827,080	1,114	1,245
April.....	15,102,213	15,974,064	1,095	1,179
May.....	14,160,206	14,076,671	1,018	1,157
June.....	13,173,987	15,815,971	917	1,013
July.....	10,650,721	16,315,232	1,026	1,153
August.....	12,002,919	15,532,530	935	1,061
September.....	14,304,315	19,454,176	886	1,083
October.....	17,068,986	15,762,337	1,070	1,150
November.....	15,126,862	15,646,105	1,099	1,175
December.....	18,685,429		1,274	
Total—				
1906.....	\$119,201,575		10,682	
1907.....	197,395,225		11,725	
1908.....	222,315,684		15,690	
1909.....	154,603,465		12,924	
1910.....	201,757,097		12,652	
1911.....	191,061,665		13,441	

RAILROAD EARNINGS

Traffic.—As was the case in 1911, the point of greatest difficulty with the railway companies of the country during 1912 was the high cost of operation, rather than decrease in the business handled, or in gross income. All indications point to an enormous railroad traffic during 1912. Whereas the car figures show a large surplus on the average during 1911, amounting to 135,938 cars in January, 1912, this surplus was reduced to 67,000 cars in June, 1912, and by October, largely due to the enormous crops of the year, an actual shortage of nearly 18,000 cars was recorded. These figures are especially significant in view of the large increase in new cars during the year.

Unfavorable Conditions.—Leading journals, like the *Commercial and Financial Chronicle*, continue to emphasize in 1912, as they did in 1911, that the railroads, considered collectively, have suffered little actual falling off in gross revenues, but that, owing to the high cost of materials and wages, and the refusal of the Government to permit a general increase in rates, the cost of operation has been so high as to produce an unfavorable showing in the net returns. It is also to be noted that in 1912 the railroads had to contend with a number of unfavorable circumstances, such as: (1) the reduction of revenue resulting from the almost complete suspension of anthracite coal mining during April and the greater part of May; (2) the partial suspension of mining in

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the bituminous region of the Middle and Middle Western states; (3) the interruption of a considerable amount of traffic on certain roads during the latter part of April and beginning of May, by the extensive overflow of the Mississippi; and (4) the extensive shopmen's strike on the Harri-man roads, and particularly the Illi-nois Central. As opposed to these unfavorable factors, however, is to be mentioned the very substantial increase in traffic resulting from the much greater activity of general business, and especially the revival of the iron and steel business, referred to elsewhere in this section of the YEAR BOOK.

IDLE CARS

(Fortnightly Reports of Net Surplus)

	1911	1912
January.....	106,924	135,938
	114,820	90,285
February.....	155,068	32,581
	173,667	13,958
March.....	189,842	7,842
	207,261	3,043
	194,887	18,703
April.....	186,053	79,389
	187,006	138,881
May.....	187,278	130,098
	167,398	116,201
June.....	166,970	86,386
	163,170	67,718
July.....	163,620	64,024
	149,072	68,922
August.....	128,091	56,510
	104,170	43,901
	84,541	9,750
September.....	64,283	n8,620
	50,038	n17,793
October.....	35,897	n31,579
	20,532	n49,981
November.....	26,514	n51,259
	23,110	n51,112
December.....	36,143	.....
	76,814	.....

n = net shortage.

Comparison of Gross and Net Earnings.—According to the *Commercial and Financial Chronicle's* elaborate compilation of gross and net earnings of American railroads for the first six months of 1912, it appears that the gross earnings amounted to \$1,365,355,859, or \$56,-349,506 in excess of the 1911 figures for the corresponding period. These figures show that traffic on American railroads was fairly satisfactory when the retarding influences, already mentioned, are considered. Owing to the high cost of materials and wages, however, the expenses of the railroads increased \$58,386,983, as contrasted with 1911, so that, in the net earnings, a small actual loss of \$2,037,477 occurred despite a considerable increase in the gross revenues. As the *Commercial and Financial Chronicle* points out: "The increase of \$56,349,506 the present year, while very substantial in amount, is relatively not as large as might be supposed, since we are dealing with totals exceeding \$1,-300,000,000. In ratio it is but 4.30 per cent. Furthermore, in part, the increase is simply a recovery in what was lost in 1911." It is to be noted, however, that the railroads are not curtailing expenditures as much as in 1911, and as explained in another part of this section, large orders have been given for repairs and equipment. It should also be remembered that the figures furnished by the *Commercial and Financial Chronicle* apply to an increased mileage of nearly 4,500 miles, or 1.9 per cent. (See also XXII, *Trade, Transportation, and Communication.*)

GROSS AND NET EARNINGS, ALL RAILROADS

	GROSS		NET	
	1912	1911	1912	1911
January.....	\$210,704,771	\$215,057,017	\$45,940,706	\$53,890,659
February.....	218,031,004	199,034,257	57,411,107	49,888,584
March.....	237,564,332	226,997,481	69,038,987	68,994,408
April.....	220,678,465	218,177,123	57,960,871	64,459,713
May.....	232,229,364	229,642,771	66,035,597	69,848,750
June.....	243,226,498	231,697,053	76,223,732	72,764,132
July.....	245,595,532	231,688,007	.....	73,671,604
August.....	276,927,416	253,043,103	.....	88,583,351
September.....	272,209,629	257,256,762	.....	92,882,796
October.....	293,738,091	266,064,129	96,085,863
November.....	241,343,763	79,050,299
December.....	283,614,912	73,361,664

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BANK CLEARINGS

Bank clearings in 1912 show a fair increase, when compared with the year 1911. From the detailed September compilation of clearings furnished by the *Commercial and Financial Chronicle* for 150 cities, only 41 cities fail to show improvement as compared with September, 1911, and these losses are very small in nearly every instance. In comparing the clearings for the last two years, the *Chronicle* states that "the increase in the country as a whole for the

month of September, as contrasted with 1911, reaches 4.4 per cent., and the gain for the period since Jan. 1 (nine months) is 7.1 per cent. Outside of New York, an augmentation of 5.7 per cent. is shown for the month and for the longer period it is 8.3 per cent. At New York the reduced activity in Stock Exchange circles served to hold down the volume of clearings, but nevertheless a moderate gain, 3.4 per cent., is recorded for the month, and the nine months' aggregate exceeds that of 1911 by 6.3 per cent."

BANK CLEARINGS

	BANK CLEARINGS OUTSIDE NEW YORK		TOTAL BANK CLEARINGS	
	1911	1912	1911	1912
January.....	\$5,945,961,000	\$6,339,569,000	\$14,476,209,000	\$15,175,151,000
February.....	4,955,343,000	5,655,969,000	12,251,508,000	12,968,617,000
March.....	5,830,383,000	6,103,224,000	13,451,984,000	14,520,179,000
April.....	5,411,915,000	6,213,715,000	12,382,727,000	15,043,870,000
May.....	5,548,078,000	6,104,005,000	13,505,702,000	14,883,285,000
June.....	5,597,880,000	5,729,871,000	13,813,415,000	13,690,863,000
July.....	5,536,589,000	6,094,527,000	13,052,405,000	14,015,610,000
August.....	5,261,858,000	5,798,413,000	12,646,000,000	13,284,697,000
September.....	5,404,792,000	5,731,313,000	12,589,769,000	13,164,149,000
October.....	6,035,574,000	7,110,401,000	13,545,778,000	17,249,398,000
November.....	6,006,420,000	6,639,033,000	14,080,295,000	15,458,870,000
December.....	6,092,866,000	.....	14,204,667,000	.....
Total.....	\$67,792,988,000	.....	\$160,165,800,000	.....

SECURITIES MARKET

Stock Transactions.—The volume of transactions in the stock market was relatively small, and in this respect the year 1912, like 1910 and 1911, was characterized by unusual dullness. Total sales of stock on the New York Exchange for the first nine months slightly exceeded the sales for the corresponding period of 1911, the respective sales being 95,604,426 and 92,294,988 shares. The dullness of the market may be judged from a comparison of the aforementioned totals with sales for the corresponding months in 1910 of 136,000,000 shares, in 1906 of 222,500,000 shares, and in 1901 of 216,000,000 shares. In fact, sales of shares were on a uniformly small scale throughout the first nine months, the monthly transactions exceeding the 13,000,000 share mark only three times, while for February, June, and July, transactions reached the very low total of about 7,000,000 shares.

Stock Prices.—The following is a brief list of representative railroad and industrial stocks, usually regarded as market leaders, showing the high and low prices for 1911 and 1912. In nearly all instances the highest quotation of the two years was reached in 1912. In the main, quotations held remarkably steady throughout the year, despite the fact that this year was a presidential one, and, in the main, showed a rising tendency. Whereas the average price for ten representative stocks, referred to in last year's *YEAR BOOK* (p. 280), had declined in September, 1911, to \$148.9, this average price had increased to \$159.7 in January of 1912, and to \$162.2 in February. From March to July, inclusive, the price ranged between \$164 and \$165.8. In August the price rose to \$168.1 and in October stood at \$166.7. According to Roger W. Babson's "Weekly Barometer Letter," the price of 20 railroad stocks averaged 121.91 in the week of Oct. 14, compared with 135 in January, 1906,

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SECURITIES MARKET, TRANSACTIONS AND PRICES

	TOTAL TRANSACTIONS				AVERAGE SECURITY PRICES			
	Shares of Stock		Bond Sales		10 Leading Stocks		10 Leading Bonds	
	1911	1912	1911	1912	1911	1912	1911	1912
January.....	10,416,526	10,906,138	\$91,504,000	\$113,834,000	158.0	159.7	98.6	97.9
February.....	10,194,217	7,086,554	73,739,000	51,828,000	159.6	162.2	98.4	98.5
March.....	6,823,868	14,552,052	65,121,000	69,951,500	157.6	164.0	98.2	98.2
April.....	5,369,350	15,959,338	55,466,000	63,437,500	156.6	160.0	98.4	97.9
May.....	11,115,578	13,662,747	91,765,000	60,965,500	158.0	165.9	98.6	97.6
June.....	10,508,400	7,219,721	89,595,500	45,731,500	161.1	165.2	98.3	97.3
July.....	5,476,559	7,158,324	60,855,500	51,910,500	161.0	165.8	98.2	97.4
August.....	14,994,533	8,952,358	48,031,500	43,530,500	155.6	168.1	98.0	96.7
September.....	17,395,957	10,107,204	62,819,000	45,364,000	148.9	167.6	97.7	96.0
October.....	10,936,901	14,166,896	73,202,400	46,327,300	151.3	.....	97.6	.....
November.....	14,919,486	8,725,317	87,497,700	38,114,200	157.4	.....	98.0	.....
December.....	9,055,883	.....	90,613,500	.....	157.6	.....	97.6	.....
Total, 1907.....	196,438,824	.....	.....	.....	.....	.....	.....	.....
1908.....	197,206,346	.....	.....	.....	.....	.....	.....	.....
1909.....	214,632,194	.....	.....	.....	.....	.....	.....	.....
1910.....	164,150,061	.....	.....	.....	.....	.....	.....	.....
1911.....	127,207,258	.....	.....	.....	.....	.....	.....	.....

RANGE OF STOCK PRICES, 1911 AND 1912 (New York Stock Exchange)

Stocks	1911		1912		Oct. 18
	High	Low	High	Low	
Amalgamated Copper.....	71½	44½	92½	60	90½
American Car & Foundry.....	58½	42½	63½	49	62½
American Cotton Oil.....	62½	41½	58½	45½	58
American Locomobile.....	43½	32½	46½	31½	44½
American Smelting & Refining.....	83½	56½	91	67½	87½
American Sugar.....	122½	112½	133½	114½	126½
American Tel. & Tel.....	153½	131½	149½	137½	143½
Atlantic Coast Line.....	139½	117	148½	133½ ^x	140½
Baltimore & Ohio.....	109½	93½	111½	101½	107½
Brooklyn Rapid Transit.....	84½	72	94½	76½	91½
Canadian Pacific.....	247	195½	283	226½	267½
Chesapeake & Ohio.....	86½	68½	85½	68½	83½
Chi., Milw. & St. Paul.....	133½	105½	114	99½	112½
Chicago & Northwest.....	150½	138½	145	134½	141½
Erie.....	38½	27½	39½	30½	35½
Great Northern Pfd.....	140	119	143½	126	139
Illinois Central.....	147	132	141½	120½	129½
International Harvester.....	129½	99½	126½	105½	123½
Lehigh Valley R. R.....	186½	151	185½	155½	176½
Missouri Pacific.....	63	33½	47½	35	45½
New York Central.....	115½	99½ ^x	121½	106½	116
Northern Pacific.....	137½	110½	131½	115½	127½
Pennsylvania R. R.....	130½	118½	126½	122½	124½
Reading.....	161½	134	179½	148½	177½
Rock Island.....	34½	22½	30½	22½	27½
Southern Pacific.....	126½	104½	115½	105½	111½
Southern Ry.....	33½	24½	32	26½	29½
Union Pacific.....	192½	153½	176½	160	172½
United States Steel.....	82½	50	80½	58½	79½

^x = ex-dividend.

84 in November, 1907, and 131.5 in August, 1909; and the price of 12 representative industrials averaged 92.62, compared with 98.7 in January, 1906, 55.7 in November, 1907, and 97.7 in August, 1909.*

* The inactivity of the stock market which prevailed during 1912, up to the time of writing the above, changed to

great activity at the beginning of December when the security market was subjected to great selling pressure, amounting at times to almost semi-demoralization. Million-share days occurred a number of times, and between Dec. 2 and Dec. 5 transactions aggregating almost 7,000,000 shares were reported on the New York Exchange, and the standard issues showed declines during a period of ten days' trading of

XIII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

Bond Sales.—Bond sales during 1912 were on an even more restricted scale on the New York Exchange than during 1911, and this state of affairs also applies as regards the issuance of new bonds. The largest volume of dealings occurred in the earlier months of the year, especially January, when total sales on the New York Exchange aggregated \$113,834,000. Thereafter the total never exceeded \$70,000,000 in any month, while, beginning with June, the monthly sales varied between the low totals of \$43,000,000 and \$52,000,000. In September, bond dealings were smaller than in September of any year since 1907, and the sales since Jan. 1 total only \$546,500,000 par value, against \$639,000,000 last year for the corresponding period, \$484,000,000 in 1910, and \$1,029,000,000 in 1909. The price of ten leading and representative bonds was 96.2 in September, 1912, as compared with 97.6 in September, 1911, and 98.8 in 1910. The average price fluctuated but little during the year, ranging from a minimum of 96.2 in September to 98.5 in February. According to Roger W. Babson's compilation, the average price of investment bonds was 96.3 in October, compared with 107 in March, 1905, 88 in November, 1907, and 102.6 in February, 1909. This poor condition of the investment stock and bond market during the year is largely traceable to the influence of high prices, first, on the net returns of large corporations, and, second, in reducing the amount of capital available for investment purposes. Judging also

from ten to 20 points. According to the *Market World and Chronicle*, "A trustworthy average of 25 stocks exhibited a decline of ten points from the high figure of the year made in September, and of that decline two-thirds was accomplished in December." Stock Exchange seats, in the meantime, it is pointed out, sold down to the lowest price since the panic of 1907. Mr. Babson's list of 20 railroad stocks averaged 116.15, compared with 121.91 in the week of October 14, and his list of 12 industrials averaged 86.06, compared with 92.62. As regards investment bonds, there was a further decline to 95.3, as compared with 96.2 in September, 1912.

from the large number of 7 per cent. preferred stocks issued by corporations in recent months, investors seem to be reluctant to invest in low interest bearing bonds even at prevailing prices.

New Securities Listed.—In the volume of new securities listed on the New York Stock Exchange, the year 1912 shows a considerable increase over both 1911 and 1910. At the time of this writing such figures have been compiled for only the first nine months of the year, and show a total of \$1,439,000,000 par value, or over \$400,000,000 in excess of the listings during the corresponding period in 1911, and \$160,000,000 in excess of 1910. Compared with 1909, however, the listing of new securities is small, because in that year the total reached the unusual figure of \$2,424,000,000. January and June are the only months in 1912 which show large listings, the totals aggregating \$296,000,000 and \$433,500,000 respectively. With the exception of these months and April, no month shows listings in excess of \$150,000,000.

LISTINGS OF NEW SECURITIES

	1911	1912
January ¹	\$84,631,000	\$296,135,560
February.....	44,060,500	110,963,200
March.....	148,620,250	63,196,000
April.....	133,448,480	212,443,400
May.....	69,266,200	113,452,900
June.....	166,751,250	433,629,800
July.....	57,057,000	17,538,000
August.....	390,374,500	142,063,600
September.....	36,583,200	47,735,000
October.....	51,448,000	.....
November.....	80,520,100	.....
December.....	66,855,865	.....
Total, 1907.....	1,100,758,650	
1908.....	1,415,448,150	
1909.....	2,439,656,870	
1910.....	1,678,147,570	
1911.....	1,329,616,345	

¹ \$228,163,550 represents listings incident to dissolution of American Tobacco Co.

INCORPORATIONS

According to the monthly statistics furnished by the *Journal of Commerce* for the incorporation of companies in the eastern states with an authorized capital of \$1,000,000 or more, the year 1912 has shown

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much greater activity in this respect than either 1911 or 1910. During the first nine months, 1912 shows incorporations, according to the *Journal*, of \$1,742,000,000, as compared with only \$1,403,000,000 during the same months in 1911. The difference is especially marked in the later months of this nine months'

period. Thus, during the last six months, ending with September, the 1912 incorporations total \$1,248,000,000 as compared with only \$732,000,000 for the corresponding months in 1911. The following are the figures published by the *Journal of Commerce* for each of the last three years:

INCORPORATIONS

	1912	1911	1910	1909
January.....	\$210,520,000	\$356,719,000	\$187,180,000	\$80,550,000
February.....	101,300,000	172,400,000	169,468,000	76,250,000
March.....	161,078,000	139,910,000	362,659,600	50,250,000
April.....	281,457,000	58,690,000	254,085,000	100,348,900
May.....	145,284,000	163,195,000	139,980,400	195,773,100
June.....	280,250,000	152,550,000	231,319,400	212,575,000
July.....	253,518,000	195,850,000	112,020,000	106,496,000
August.....	164,500,000	87,350,000	107,500,000	88,500,000
September.....	145,050,000	77,004,000	58,100,000	225,925,000
October.....		124,220,000	93,695,000	145,500,000
November.....		150,593,400	119,023,000	146,951,000
December.....		159,450,000	132,587,050	136,870,000
Total.....		\$1,837,431,400	\$1,967,617,450	\$1,565,989,000

MONEY MARKET

The year 1911 was characterized at all times by unusual ease in money rates, owing to the severe liquidation in securities, the practical cessation of new issues of securities, and the depressed condition of trade. Call loan rates in New York most of the time averaged between $2\frac{1}{8}$ to 3 per cent., and even during the crop-moving season call loan rates seldom exceeded 3 per cent., and time loans for 4 months ranged between 4 and $4\frac{1}{2}$ per cent. Owing to general business improvement, the year 1912 witnessed a more profitable employment for funds, and while thus far no money stringency has appeared, the average call- and time-loan rates are higher than in 1911. At the beginning of October, call-money renewals were quoted at about 4 per cent.; and by November once reached 9 per cent., while commercial paper is quoted at 6 per cent., as compared with $4\frac{1}{2}$ to $4\frac{3}{4}$ per cent. a year ago. As the *Commercial and Financial Chronicle* stated in its issue of Nov. 9, "there is no expectation in banking circles of anything like cheap money during the closing weeks of the year, and should there be any substantial ad-

vance in general business, the strength and activity in money would not be unlikely to last well into the new year." The statement then shows that the reserves of the New York Clearing House institutions are very low, the surplus being down to \$2,580,000, as compared with \$11,532,950 in the corresponding week of 1911. As regards time loans, rates of $5\frac{1}{4}$ to 6 per cent. were charged for 60 days, 90 days, and four months, and $5\frac{1}{2}$ to $5\frac{3}{4}$ per cent. for five and six months. The rate for choice six months' names was quoted at $5\frac{1}{4}$ to 6 per cent., while names not classed as strictly choice were quoted at $6\frac{1}{2}$ per cent.

The most interesting feature of the year in the money market was the rapid increase in call loan rates during December. Call accommodations reached 20 per cent., the most exacting since the 1907-8 panic period, with the exception of the flurry early in January, 1910. Commercial paper and time loan rates moved up to 6 per cent. for short maturities. Every evidence of a strained credit situation was furnished by the movements of money rates. The bank statements also showed a shortage of bank reserves as compared with the legal requirements.

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MONEY MARKET CONDITIONS

	LOANS		NEW YORK CLEARING HOUSE BANKS			
	(000 omitted)		Deposits (000 omitted)		Surplus Reserves (000 omitted)	
	1911	1912	1911	1912	1911	1912
January	\$1,242,011	\$1,373,429	\$1,244,825	\$1,420,820	\$28,091	\$31,236,875
February	1,316,800	1,418,783	1,353,262	1,486,025	37,045	36,676,438
March	1,340,111	1,425,305	1,380,285	1,463,531	33,879	15,169,500
April	1,354,864	1,398,612	1,398,961	1,410,717	32,896	10,388,813
May	1,337,863	1,380,275	1,392,903	1,415,516	43,681	16,696,875
June	1,358,025	1,393,226	1,416,472	1,446,836	42,079	25,412,850
July	1,392,594	1,399,425	1,432,353	1,430,984	17,993	8,126,188
August	1,365,437	1,301,764	1,405,641	1,427,907	24,064	17,140,560
September	1,354,880	1,357,230	1,385,983	1,359,297	24,499	4,071,688
October	1,259,760		1,376,285		13,345	
November	1,361,727		1,374,782		10,933	
December	1,310,782		1,304,458		9,303	

	MONEY RATES						GOLD MOVEMENTS	
	New York Monthly Average				Average Bank Rates, England, France and Germany			
	1911		1912		19121911		1912	1911
	Call	Time	Call	Time				
January	3½	4¼	2½	4	4½	4½	—\$3,250,341	+ 8,617,154
February	2½	4	2¼	3¾	4	3¾	+ 7,652,021	+ 5,381,111
March	2½	4	2½	4½	4	3¾	+ 3,117,911	+ 3,613,448
April	2½	3¾	3½	4¾	4	3¾	— 2,075,783	+ 3,019,201
May	2½	3¾	2¾	4½	3¾	3¾	+ 1,104,408	— 1,802,409
June	2½	3¾	2½	4	3½	3¾	+ 1,559,978	+ 1,692,959
July	2½	3¾	2½	4½	3½	3¾	+ 3,516,705	+ 416,505
August	2½	4½	2½	5½	3½	3¾	— 3,078,428	+ 3,143,733
September	2½	4½	4½	5½	3½	3¾	— 3,632,380	— 2,351,235
October	2½	4½				4½		— 118,433
November or	2½	4				4½		+10,482,772
December	4½	4½				4½		— 3,712,653

+ = excess of exports. — = excess of imports.

PRICES AND COST OF LIVING

Index Numbers.—The same tendency toward increasing commodity prices, as explained in the 1911 *AMERICAN YEAR BOOK* (p. 282), is noticeable throughout 1912. Bradstreet's index number for the year 1911 averaged 8.71, but in January, 1912, stood at 8.949. In almost every succeeding month this average shows an increase. Thus, in April the index number reached 9.097, in May 9.269, and in October 9.45, this being the highest mark yet recorded. Likewise the London *Economist's* index number, representing English prices, which averaged 2542 in 1911, showed a steady increase month by month during 1912. Thus, in January the *Economist* published 2581 as its index number, in February 2613, in March 2667, and in April 2791. This was the highest index number published by the *Economist*, but the

decline since that time has been very slight, since in October the index number stood at 2740. Mr. Gibson's index number, likewise, shows an increase. In 1911 the average index number for the year is given as 109.1, which with the exception of 1909 and 1910, when the index number stood respectively at 111.9 and 115.2, was the highest recorded since 1890. In January, 1912, Mr. Gibson gave his index number as 112.4. From that time on, his number gradually increased until May, when it stood at 122.7, this being the record number published in his table. By October the average price had declined to 115.8, which is still in excess of the average price for any year since 1890.

Causes of the Advance.—The reasons for these increasing prices are the same as those outlined in the previous issues of the *AMERICAN YEAR BOOK*, and are traceable mainly

XIII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

to the increased output of gold, and underproduction. Throughout the year high prices exerted a powerful influence on the net returns of large corporations, owing to increased demand on the part of the wage-earning classes for a higher wage return. High prices were also made one of the leading factors in the presidential campaign. The effect of the higher price level upon the wage-earning class is apparent upon an examination of Mr. Gibson's index numbers, classified by commodities. Thus, the index number for "commodities other than foods" stood at 55.9 in October, compared with 51.5 in September, 1911, and 55.9 for the year 1910 and 47.2 in 1900. In the case of minerals the number for October, 1912, stood at 17.1, as compared with 14.7 in September, 1911,

15.4 in 1910, and 14.8 in 1909. An examination of Mr. Gibson's table of index prices will show that in these two classes of commodities as well as in the case of clothing, the increase in prices has not been extraordinary when compared with the years 1907 to 1911, inclusive. In the case of "foods," however, the index number increased from an average of 56.9 to 66.6 in June, 1912. This seems an extraordinary increase when compared with the increase in other groups of commodities. It is to be noted, however, owing largely to the magnificent crops of the year, that the index price for "all foods" has declined to 59.9 in October, 1912, but this figure is still higher than the average price for the years 1911 or 1910. (See also XIX, *Statistics of Agriculture*.)

INDEX NUMBERS

YEAR	Bradstreet's	London Economist	YEAR	GIBSON'S					Total
				All foods	Clothing	Minerals	Other	All other than foods	
1900.....	7.88	2,125	1890.....	43.4	17.3	15.5	15.4	48.3	91.6
1901.....	7.57	1,948	1895.....	42.0	15.3	11.0	13.2	39.5	81.5
1902.....	7.88	2,003	1900.....	44.2	16.3	14.8	16.1	47.2	91.4
1903.....	7.94	2,197	1905.....	47.3	18.0	16.0	17.1	51.0	98.3
1904.....	7.92	2,136	1906.....	49.8	19.2	16.6	19.6	55.4	105.2
1905.....	8.10	2,342	1907.....	50.9	20.8	18.9	19.3	56.0	109.9
1906.....	8.42	2,499	1908.....	54.2	17.6	15.4	18.3	51.3	105.5
1907.....	8.90	2,310	1909.....	59.2	17.3	15.2	20.2	52.7	111.9
1908.....	8.01	2,197	1910.....	59.3	18.9	15.4	21.6	55.9	115.2
1909.....	8.51	2,390	1911.....	56.9	18.0	14.4	19.5	52.2	109.1
1910.....	8.98	2,373	1912, Jan...	62.3	16.2	15.1	18.8	50.1	112.4
1911.....	8.7132	2,542	Feb....	61.7	16.5	14.9	19.1	50.5	112.2
1912, Jan...	8.9493	2,581	Mar....	63.8	17.2	15.6	19.1	51.9	115.7
Feb....	8.9578	2,613	Apr....	67.8	17.6	15.7	19.3	52.7	120.5
Mar....	8.9019	2,667	May....	69.4	17.5	15.4	20.5	53.4	122.7
Apr....	9.0978	2,791	June....	66.6	17.4	15.6	20.8	53.8	120.4
May....	9.2696	2,693	July....	62.6	17.6	15.9	20.8	54.3	116.9
June....	9.1017	2,687	Aug....	61.1	18.0	16.0	20.6	54.7	115.7
July....	9.1119	2,705	Sept....	60.4	18.1	16.7	20.7	55.7	116.1
Aug....	9.1595	2,746	Oct. 5...	59.9	18.3	17.1	20.5	55.9	115.8
Sept....	9.2157	2,722	.....	.....	.....	.....	.....	.....	.....
Oct....	9.4515	2,740	.....	.....	.....	.....	.....	.....	.....
Nov....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dec....	.....	.....	.....	.....	.....	.....	.....	.....	.....

THE CONDUCT OF BUSINESS

Anti-Option Bills.—In 1911 the most important bill of this character under consideration was the Scott bill, which had for its real object the destruction of the future contract in cotton. During 1912 no less than 16 bills were introduced in the House of Representatives which had for their purpose the elimination

of the future contract, and which in most instances resemble the Scott bill. In numerous instances the bills were exceedingly drastic in character, imposing a heavy fine and imprisonment for those who sold short, or who sold for future delivery without actually intending to deliver the commodity.

Many of these bills refer to the grain market, but the Beall bill, which aimed to prohibit dealings in cotton futures, and which passed the House of Representatives by a vote of 95 to 25, may be considered as representative of the several bills, and in fact was among the least drastic in character. This bill declared it to be unlawful for any person to send or cause to be sent any message offering to make, or enter into, a contract for the purchase or sale for future delivery of cotton, without intending that such cotton be actually delivered or received; and the transmission of any message relating to any such transaction was declared to be an interference with commerce among the states, and would subject the person thus transmitting the message, to a fine of not more than \$1,000, nor less than \$100, or imprisonment for not more than six months, nor less than one month. Moreover, the bill provided that it shall be the duty of any person sending any message relating to a contract for future delivery of cotton, to furnish to the person transmitting the message, an affidavit stating that he is the owner of such cotton, and that he has the intention to deliver such cotton; or that such cotton is at the time in actual course of growth on land, owned, controlled, or cultivated by him; or that he is at the time legally entitled to the right of future possession of such cotton. The effects resulting from the enactment of such a law would be far reaching in the handling of our agricultural crops, and the situation is well explained in a communication addressed by W. B. Thompson, of the New Orleans Cotton Exchange, to certain representatives in Congress. In this communication Mr. Thompson said:

The Beall anti-cotton future bill, if enacted, will strike Southern prosperity the severest blow it has sustained in many years. It is admitted that some legislation on future trading is needed, but the bill in question is drastic and destructive. To informed or open minds it has been demonstrated that the proposed legislation would prevent American merchants from hedging their spot purchases and sales and would destroy the American contract exchanges. The

inevitable results of such legislation would be: first, to deprive the cotton producer of the multitude of small competitive markets and buyers which now purchase the crop, and in consequence summarily lower the price of cotton; and, secondly, to place the price-making power unreservedly in the hands of a combination of foreign buyers and spinners who would unquestionably fix it low.

The Coöperation of Cotton Exchanges.—In July, 1912, owing to a misunderstanding, relative to the classification of cotton, between the Cotton Exchange of Savannah and a similar body at Bremen, Germany, a conference was organized, which held its first session at the New York Cotton Exchange, and was attended by the representatives of 41 American exchanges. The object of this conference was to create better relations between American shippers and foreign consumers of cotton, and various resolutions were adopted, one of which provided that "all cotton interests should work toward the adoption of a standard of classification for American cotton of all growths, which shall be world-wide." This coöperative movement will have far-reaching results in overcoming the inconvenience and friction resulting from the many standards of classification in vogue. The adoption of a universal standard would necessarily be difficult in its application, but the conference expects to arrange these matters by suggesting that the arbitration and appeal committees of the several European exchanges should have expert classifiers as members, who are under salary and not otherwise interested in the cotton trade. George W. Neville, president of the New York Cotton Exchange, was requested to bring about a conference between European and American cotton interests, for the purpose of arranging plans for the handling of the 1913-14 crop. Reports are to the effect that this conference was successfully arranged, and that some 30 southern exchanges, as well as the leading European exchanges, have expressed their approval of the holding of such an international conference. According to the press, this conference will undertake the making of arrange-

ments for packing and shipping cotton, for arbitration proceedings, and for the establishment of an international standard for classifying American cotton.

Cotton Bills of Lading.—In the 1911 issue of the *AMERICAN YEAR BOOK* (p. 286) it was explained that in August, 1911, the Liverpool Cotton Bill of Lading Conference Committee, representing the Liverpool Cotton Association and the banking interests of Europe, submitted a carefully considered plan for the creation of a central bureau in the city of New York, for the purpose of verifying the genuineness of all through bills of lading; and that this Central Bureau was opened in New York on September 1st, and was subsequently approved by the committee on bills of lading of the American Bankers' Association. In August, 1912, the Liverpool Cotton Bills of Lading Conference Committee announced its decision to create, in conjunction with the central bureau, an information bureau. The American representative of the Liverpool committee, Charles S. Haight, announces that "during the last six months, information has been collected regarding the financial standing of cotton shippers throughout the South, and through the bureau, inquiry can be made regarding the financial standing of any particular shipper. If the information required is not already at hand it will be obtained by the bureau."

Opposition to this central bureau has by no means ceased, and it was reported in 1911 that the leading exchange buyers of New York had refused to recognize the bureau or to agree to the plan, and that considerable opposition was also directed against the plan by the New Orleans and Galveston cotton exchanges, and the New Orleans Clearing House Association. Hence, according to the *New York Journal of Commerce*, a movement has been launched to replace the Central Bureau by a "credit office," supported by an association of foreign cotton buyers. (See also XIV, *Banking and Currency*.)

The Regulation of Water Transportation Companies.—Unlike the

railroads, navigation companies have been subjected to comparatively little governmental regulation, except in minor particulars. During 1912, however, several important measures were passed by Congress which have aroused a great deal of comment in the press, and which, it is believed, will have a far-reaching influence. In the first place Congress passed the act to provide for the opening, maintenance, protection, and operation of the Panama Canal. Several important sections were incorporated in this act with a view, first, to exempting American vessels engaged in the coastwise trade from the payment of tolls; second, to prohibiting any vessel owned or controlled by corporations operating in violation of the Sherman anti-trust law, from using the canal; third, to prohibiting the ownership by railroads of any water lines with which they do or may compete; and fourth, to giving the Interstate Commerce Commission the power to extend the time to which such railroad-owned water line service may be operated beyond July 1, 1914, if the Commission finds this beneficial. (See also XI, *The Panama Canal*.)

Section 11 of the Act provides that,

From and after the first day of July, nineteen hundred and fourteen, it shall be unlawful for any railroad company or other common carrier subject to the Act to regulate commerce to own, lease, operate, control, or have any interest whatsoever (by stock ownership or otherwise, either directly, indirectly, through any holding company, or by stockholders or directors in common, or in any other manner) in any common carrier by water operated through the Panama Canal or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic, or any vessel carrying freight or passengers upon said water route or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic; and in case of the violation of this provision each day in which such violation continues shall be deemed a separate offense.

The Act next confers on the Interstate Commerce Commission the jurisdiction "to determine questions of fact as to the competition or pos-

sibility of competition." Among its many other provisions, this Act also gives to the Interstate Commerce Commission jurisdiction to establish physical connection between the lines of rail-carriers and the docks of the water carriers, and to establish joint routes and maximum joint rates between rail and water lines. Provision is also made to the effect that:

If any rail carrier subject to the Act to regulate commerce enters into arrangements with any water carrier operating from a port in the United States to a foreign country, through the Panama Canal or otherwise, for the handling of through business between interior points of the United States and such foreign country, the Interstate Commerce Commission may require such railway to enter into similar arrangements with any or all other lines of steamships operating from said port to the same foreign country.

In addition to the aforementioned act, the House of Representatives, also passed House Resolution 587, for the investigation of the methods and practices of the ship lines and water-transportation agencies engaged in our oversea, coastwise, and inland commerce, and the relation between such ship lines and other transportation agencies and the railroads. The object of the resolution is to empower the Committee on the Merchant Marine and Fisheries to investigate to what extent any of the vessel lines, engaged in our foreign or coastwise or inland commerce, are controlled by railway companies or by other navigation companies, and to ascertain the extent to which the methods and practices of foreign steamship lines are in violation of our laws, and the extent to which existing combinations, agreements, or working understandings between the navigation companies themselves, or between such companies and the railroads, affect the freight rates and the commerce of the country. The committee is directed to report the facts to the House and to recommend legislation, if any, which it deems advisable in relation thereto.

Government Suits Against Combinations.—Not only has Congress undertaken to regulate and investigate navigation companies, but the

Department of Justice also brought suits in 1912 against two foreign steamship combinations. One of these suits is directed against the combination of steamship lines operating from the United States to Brazil. The Government charges these lines with violating the Sherman anti-trust law, and the case has particular reference to the deferred rebate system adopted by these several lines, whereby shippers agree to give all their shipments to a particular line belonging to the Conference in return for a rebate of a portion of the freight charges, usually 10 per cent. The lines are also charged with conspiring to monopolize the trade and control rates. The second suit was brought against a large number of the North Atlantic steamship lines, belonging to the so-called North Atlantic passenger pool. This pool controls the immigrant traffic from Europe to the United States, the several lines having an arrangement whereby fares are controlled. In view of the general existence of conference arrangements among foreign steamship lines, as explained in the British report on "shipping rings," these suits will prove of much interest in determining whether foreign steamship lines operating to and from the United States may be members to such agreements under the Sherman anti-trust law.

Suits were also brought by the Government against the Harvester Trust, and a considerable number of smaller industrial combinations (see IX, *Law and Jurisprudence*). Considerable interest was aroused by the suit brought by the Department of Justice, under the Sherman anti-trust law, against the agents of the much discussed "coffee valorization plan" (see also III, *International Relations*). This plan was begun in 1906, under the auspices of the Brazilian Government, by an international syndicate which has operated the plan up to the present time. In this suit the Government states that the syndicate has removed from the American market large quantities of coffee bought from Brazilian producers, and that such holdings have only been sold at prices fixed arbi-

trarily by the syndicate. The complaint sets forth the contract between the Brazilian Government and the syndicate, entered into in July, 1906, whereby it was agreed that the syndicate coffee should only be sold at between 14 and 15 cents a pound, although, the Government charges, the price during the two preceding seasons ranged from $7\frac{1}{2}$ to $8\frac{1}{2}$ cents. A \$75,000,000 loan was negotiated for the operation of the plan, this loan being issued by the Brazilian state of Sao Paulo and guaranteed by the Brazilian federal Government. Moreover, according to the facts set forth by the Government, the syndicate bought over 8 million bags of coffee by the close of 1907, and subsequently these purchases were raised to nearly 11 million bags. In the meantime only 3,781,000 bags were sold up to September, 1909, leaving over 7 million bags to be sold in the future. The Government lays special stress on the advance of nearly 100 per cent. in the price of coffee since the organization of the plan, and contends that the American operations of the syndicate are in violation of the anti-trust law.

Investment Bankers' Association of America—This association with a membership of many of the nation's leading investment institutions, came into organized existence early in August, and at its first meeting there were present over 150 representatives of investment houses from all sections of the country. The main object of the association is to protect investors against investments in unworthy or fraudulent enterprises, and to surround legitimate investment firms with proper safeguards. As stated in the preamble to its constitution, the purpose of the association is:

To promote the general welfare and influence of investment banks, or bankers, likewise banking institutions operating bond departments, and to secure uniformity of action, both in legislation and in methods of handling securities, together with the practical benefits to be derived from personal acquaintance, and for the discussion of subjects of importance to the banking and commercial interests of the country, which affect the investing public.

and for protection against loss by crime, or through wilful and irresponsible dealers in investment securities, and to surround the offerings of its members with greater safeguards, whereby they will enjoy the broadest markets possible, both at home and abroad.

The Chamber of Commerce of the United States of America.—The organization of this national Chamber of Commerce, which will hold its first annual meeting in Washington, beginning Jan. 21, 1913, has for its purpose "the nationalizing of the domestic and foreign commerce of this country by coöperative effort among commercial organizations, somewhat similar to the plans adopted by the British and German Chambers of Commerce." A large number of commercial organizations have taken membership, and each association is entitled to one delegate for the first 25 members, and to one additional delegate for each additional 200 members, but no association is entitled to more than ten delegates. The rate of dues for each member is based upon the scheduled annual income from membership, being approximately one-half of one per cent. of the scheduled income, but in no case less than \$10 or more than \$700.

The organization publishes a paper known as *The Nation's Business*, containing information on matters of national interest. This paper is sent to every daily newspaper and leading trade paper of the country, and according to recent information, over 1,000 editors have requested the paper under personal cover. The paper furnishes constructive news, and is prepared for the use of editorial writers and commercial organizations, and, in the words of the publication committee, the paper "will gather for the use of newspapers and organizations, current information regarding the development of the nation. Every reader is therefore invited to be a correspondent regarding local, state, or national facts of agriculture, mining, manufacturing, transportation, distribution, finance, education, the professions, the government, and altruism." Nothing in any issue of the paper is copyrighted, and all is at the disposal of editors.

International Congress of Chambers of Commerce.—The Fifth International Congress of Chambers of Commerce and Commercial and Industrial Associations was held in Boston, Sept. 24-26, under the presidency of Louis Canon-Legrand, president of the Federation of Commercial and Industrial Associations of Belgium. The Government of the United States, the commonwealth of Massachusetts, the city of Boston, and the Boston Chamber of Commerce united in welcoming the 770 delegates. The delegates from foreign countries numbered 535, representing about 50 different countries, and including the officially appointed representatives of 27 foreign governments. After the close of the Congress most of the foreign delegates participated in a tour of the principal cities of the United States.

The principal topics discussed, and the action of the Congress thereon, were as follows:

1. The establishment of an international court of arbitral justice for suits between individuals and foreign states.—This question was referred to the permanent committee for investigation, along with a motion indorsing international arbitration in the widest sense. (See III, *International Peace and Arbitration*.)

2. The unification of legislation relating to checks.—The Congress resolved that such unification is desirable, and a special committee was appointed to report on a plan of unification at the next Congress. (See XIV, *Banking and Currency*.)

3. Commercial statistics, and the

immediate institution of an international office.—The Congress approved the decision of the international conference held at Brussels in 1910 to establish an international nomenclature under which are to be grouped all imported and exported articles of merchandise. And expressed the wish that this nomenclature appear in the briefest possible space of time in the statistical tables of the governments represented at this conference.

4. The desirability of an international conference upon the limitation of through-order-notify bills of lading, and of legislation and other means of making the system more effective.—The Congress approved the legislation pending before the United States Congress, making carriers responsible on their bills of lading, where issued by their authorized agents, after they have passed into the hands of third innocent parties; approved the Central Bureau for the safeguarding of cotton bills of lading against forgery; and recommended to the permanent committee a consideration of the desirability of an international congress for the promotion of international laws governing international carriers. (See also "Cotton Bills of Lading," *supra*.)

5. The desirability of international uniformity of action in the matter of consular invoices.—The Congress approved in principle the proposal for uniformity of consular invoices, and recommended to the several chambers for their favorable consideration the form of invoice prepared for the consular reference of American States.

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC FINANCE

C. C. WILLIAMSON

FEDERAL FINANCE

The Government's Financial Condition.—In his message communicated to Congress Dec. 21, 1911, President Taft referred to the "very satisfactory" financial condition of the Government, as shown in an excess of receipts over disbursements and the condition of public credit which made it possible to sell Panama Canal three per cent. bonds at an actual interest rate of 2.959 per cent. He also pointed out that "a calculation of the actual increase in the expenses of government arising from the increase in the population and the general expansion of governmental functions, except those of the Post Office, for a number of years shows a normal increase of about four per cent. a year."

Receipts and Expenditures.—The following tables show the ordinary receipts and expenditures, and the financial transactions for the Panama Canal, for the years ending June 30, 1911, and June 30, 1912:

ORDINARY RECEIPTS
(In millions of dollars)

	1911	1912
Customs.....	314	311
Internal revenue:		
Ordinary.....	289	293
Corporation tax.....	34	29
Miscellaneous.....	64	59
Total.....	701	692

ORDINARY EXPENDITURES
(In millions of dollars)

	1911	1912
Civil and miscellaneous.....	174	172
War.....	160	149
Navy.....	120	136
Indians.....	21	20
Pensions.....	158	154
Postal deficiency.....		2
Interest on public debt.....	21	23
Total.....	654	656

PANAMA CANAL
(In millions of dollars)

	1911	1912
Receipts (sale of bonds).....	18	33
Expenditures.....	37	35
Excess of expenditures over receipts.....	19	2
Surplus, including Panama Canal.....	28	35
Balance in General Fund at close of year.....	140	167

Appropriations for 1913.—Total appropriations for 1913, regular, miscellaneous, and permanent, amount to \$1,019,636,143, which is \$7,046,738 less than the appropriations for 1912, and \$21,011,833 less than the estimates. The decrease for 1913 is due to a smaller appropriation for the Panama Canal. Since the Canal is approaching completion, it was possible to appropriate about 17 millions less than in 1912.

Estimates for 1914.—The total estimates for the fiscal year 1914, submitted to Congress by the Secretary of the Treasury on Dec. 2, amount to \$1,105,206,963. This estimate includes the sum of \$281,791,508 for the Post Office, which is expected to be self-supporting. Omitting the Post Office estimate, there is an increase of \$72,078,248 over the appropriations for 1913. The principal increases are for the Navy Department, \$28,312,220 (see XII, *The Navy*), for pensions, \$20,000,000, and for rivers and harbors, \$16,311,372.

Veto of Appropriation Bills.—An unusual occurrence was the exercise of the presidential veto against two important appropriation bills, viz., the Legislative, Executive, and Judicial Appropriation bill and the Army Appropriation bill. On June 17 President Taft vetoed the latter because of legislation attached to it

which he considered would substantially and unwisely reorganize our military establishment (see XII, *The Army*). Again on Aug. 15 the President returned the Legislative, Executive, and Judicial Appropriation bill without his approval, pointing out the "dangers inherent in the practice of attaching substantive legislation to appropriation bills," and declaring that "the importance and absolute necessity of furnishing funds to maintain and operate the Government cannot be used by the Congress to force upon the Executive acquiescence in permanent legislation which he cannot conscientiously approve." The veto in this case was aimed at two "riders," one limiting the tenure of office of civil-service employees to a term of seven years and the other repealing the act creating the Commerce Court. President Taft was convinced that the purpose of the proposed civil-service measure, which was the elimination of those who have become inefficient through disease and old age, can be better accomplished by means of a civil-service pension system. Touching the abolition of the Commerce Court, he declared: "I am utterly opposed to the abolition of a court because its decisions may not always meet the approval of a majority of the legislature." An attempt to pass these bills over the veto failed. Formerly the rules of the House prohibited legislative "riders" of this sort. Recently, however, a good many important laws have been enacted as a part of appropriation bills.

Budget Reform.—Perhaps the most important event of the year in matters of federal finance is the effort of President Taft to bring about the adoption of a budget system and improved financial methods. The situation, as the President sees it, calls for a thorough reform. "There is at present," he declares, "no provision for reporting revenues, expenditures, and estimates for appropriations in such manner that the executive, before submitting estimates, and each member of Congress, and the people, after estimates have been submitted, may know what has been done by the Government or what the Government proposes to do." Secretary of the

Treasury MacVeagh has in his recent annual reports strongly advocated the adoption of a budget system.

The President's Commission on Economy and Efficiency, acting under the instructions of the President and the wide authority given to it by Congress, has prepared and submitted to the President an elaborate and most valuable report on "The Need for a National Budget" in which it is recommended that the President should be required to submit to Congress at the beginning of each session a budget, to contain a brief budgetary message, a summary financial statement, a summary of expenditures, and a comparison of the estimated and actual revenues and expenditures for a period of years, together with recommendations as to new legislation. The Commission also recommended that the Secretary of the Treasury be required to submit to Congress detailed reports in the form of a book of estimates and a consolidated financial report giving a detailed statement of revenues and expenditures for the previous five years. Other recommendations also aim to secure greater economy and efficiency and to fix responsibility through an improved system of reports and accounts.

In addition to a thorough discussion of its constructive recommendations, the Commission's report contains a valuable historical and descriptive study of the present financial methods of Congress and the executive departments, an outline of what the proposed budget would contain, and, as Appendix V, answers submitted by the United States representatives abroad to questions on budgetary methods in foreign countries.

In a message of June 27, 1912, President Taft transmitted this report to Congress, recommending the legislation necessary to put its recommendations into effect. It is understood that the immediate budget reform would serve as the groundwork for general reforms in standardization, consolidation and increased efficiency in all branches of the government service.

Reforms so far-reaching could not fail to arouse antagonism. A gen-

eral appropriations committee, as contemplated in the proposed budget plan, would mean a reduction in the power and prestige of several committees that now have to do with important branches of expenditure. Evidence of this opposition is seen in a provision of the Sundry Civil bill reducing the salaries and expenditures of the Commission and in a paragraph, inserted at the last moment, providing that "the regular annual estimates of appropriations and expenses of the Government shall be prepared and submitted to Congress by those charged with the duty of such preparation and submission only in the forms as, at the time, are required by law and in no other form and at no other time." This provision seems to have been designed to prevent the President from carrying out his announced plan of submitting next year's estimates to Congress in budget form, to accompany the regular book of estimates which the Secretary of the Treasury is required to submit. President Taft has taken the stand that Congress has not the constitutional authority to prevent him from submitting to it "and to the country a statement of resources, obligations, revenues, expenditures, and estimates in the form he deems desirable."

The Tariff.—Although tariff matters occupied a large share of the attention of Congress, little was accomplished save the elimination of the Tariff Board. The Democrats, in control of the House, adopted the plan of revising the tariff a schedule at a time, a method which President Taft had himself frequently recommended. In favor of separate revision of individual schedules are the possibility of a more thorough investigation of the facts concerning each industry considered and the lessened opportunity for vote-trading and log-rolling, as well as a less serious business shock.

The Steel Schedule.—On Dec. 20, 1911, the President sent to Congress a message submitting the long-expected report by the Tariff Board on the wool schedule. Action on this schedule being therefore necessarily delayed in order to give time to study the Board's report, the steel and iron

schedule was first taken up. In its report the Ways and Means Committee (U. S. 62d Cong., 2d sess., House rept. 260) came to the conclusion that the industries affected by this schedule were quite able to compete with foreign manufacturers without protection; that earnings and profits were already sufficiently high; and that labor conditions did not justify any claim to a continuance of protective rates. The duties recommended were, therefore, placed on a purely revenue basis, at an estimated reduction from an average of 34.51 per cent. *ad valorem* to 22.42 per cent.

On Jan. 29 the bill passed the House, but on April 5 was reported on (U. S., 62d Cong., 2d sess., Senate rept. 591) adversely by the Senate Committee on Finance, after hearings lasting several days. The reductions of the House bill were characterized as "radical and unreasonable," made without adequate investigation, and opposed by all who had appeared before the Committee. The bill as a whole was considered a failure as a revenue measure and objectionable because rates were *ad valorem*. Nevertheless, on May 30 the Senate adopted the House steel bill, with four amendments, one of them repealing the Canadian Reciprocity Act, and fixing a duty of \$2.00 a ton on all print paper imported into the United States in lieu of a duty of about \$4.00 provided in the existing law. This amendment the House rejected and the Senate finally receded from its position. The bill then passed and on Aug. 15 was vetoed by President Taft (U. S., 62d Cong., 2d sess., House doc. 908) on the ground that it was hastily prepared, provided only for revenue, and failed to protect sufficiently the industries affected. The House then passed it over the veto, but the Senate refused to do so.

The chemical schedule was the second to be taken up. The Ways and Means Committee on Feb. 16 made a voluminous report of over 400 pages. The chemical industry was given a special schedule of the tariff for the first time in 1883 and the classification has remained practically unchanged since that time, although the industry has been completely trans-

formed. The Committee claimed to have revised the classification so as to conform with modern industrial and administrative requirements. It was found that our patent laws have so far eliminated all competition that the chemical industries are quite able to hold their own without highly protective duties. A bill embodying the views of the Committee was passed in the House on Feb. 21 by a vote of 178 to 127, only one Republican voting for it. The Senate on July 3 rejected the House bill, the Committee on Finance having refused to recommend its passage.

The Sugar Bill.—On March 1 the House Democrats in caucus decided to put sugar on the free list, thus abolishing \$53,000,000 in annual customs revenue, and to extend the corporation tax to include individuals and copartnerships with incomes of \$5,000 a year or more. The Ways and Means Committee claimed to have established the fact that the full import tax, or $1\frac{1}{2}$ cents a pound, is paid by the consumer, so that free sugar would represent a saving to the public of \$115,000,000 a year. The minority, however, presented a vigorous protest against the measure, charging that an agreement had been made between the Democratic party and the sugar trust, enabling the Democrats to catch the popular vote and the sugar trust to go unmolested. On March 15 the House, following a spirited debate, passed the free sugar bill by a vote of 198 to 103. Twenty-four Republicans voted for it, while Democrats from sugar-producing states voted against it.

The excise bill, designed to make good the revenue sacrificed in the sugar bill, was reported by Chairman Underwood on March 14, the report being mainly an argument to prove that an income tax in the form of an excise tax is constitutional. The bill was passed on March 19 by a vote of 250 to 40, all the Democrats and 80 Republicans voting for it, and on July 26 it passed the Senate, with certain amendments, by a vote of 37 to 18. Four days later the House refused to accept the amendments. On the same day the House also rejected the Lodge Sugar bill, which had been passed on July 27 as a sub-

stitute for the House bill. The Lodge bill reduced the duty on sugar and abolished the differential, entailing a revenue loss of about \$5,000,000. The Democratic bill, it will be recalled, would have meant a loss of \$50,000,000 to \$60,000,000.

The Wool Schedule.—Schedule K of the Payne-Aldrich tariff has been constantly and vigorously attacked on all sides and has found few willing to defend it. President Taft himself declared its rates to be indefensible, but was nevertheless constrained to veto a bill reducing the duty on wool and woolens prepared in the special session of the summer of 1911, because, he said, the bill presented to him was hastily drawn, without accurate and scientific information, so that he could not tell whether it met his platform pledge to adjust rates with reference to the difference in the cost of production at home and abroad. He urged Congress to postpone all revision until the Tariff Board should report in December.

Although the Tariff Board's wool report was laid before Congress on Dec. 20, it was not until March 27 that the Ways and Means Committee reported on it (U. S., 62d Cong., 2d sess., House rept. 455). The bill which came from the Committee (H. R. 22195) was identical with the one (H. R. 11019) President Taft had vetoed the preceding August. The latter bill, the Democrats claimed, had been framed in accordance with the popular mandate and had been based on elaborate and painstaking investigations. In the report of the Tariff Board they failed to find anything requiring changes in the rates of H. R. 11019. The minority of the Committee, however, found in the data presented by the Tariff Board warrant for a substitute bill designed to carry out the Republican party's principle of equalizing the difference of cost of production at home and abroad.

While the report of the Tariff Board contained no definite suggestions as to the proper rates, competent critics believed that it called for slight reductions. The Ways and Means Committee complained that it was not a tariff report at all; that, instead of discussing the effects of the

tariff on capital and labor and the consumer, it confined itself to an analysis of the money expenses involved in the production and manufacture of wool. Whatever its value, the report was not destined to find favor with the Democratic House, but so good an authority as Prof. Taussig was able to say:

It contains a mass of valuable information. Even those who have followed the previous literature of the subject, official and unofficial, cannot fail to find here new and helpful material. Whatever be the serviceability of the report toward settling legislation, its usefulness to the honest-minded inquirer cannot be doubted.

On April 1 the bill passed the House and on June 3 was adversely reported by the majority of the Senate Committee on Finance, though it finally passed the Senate with certain amendments which the House refused to accept. The differences having been adjusted in conference, the bill was presented to the President, who vetoed it on Aug. 9 (U. S., 62d Cong., 2d sess., House doc. 903). In his veto message President Taft asserted that the report of the Tariff Board fully justified his veto of the previous bill. He pointed out that the rate of 29 per cent. on raw wool in the Underwood bill was inadequate to cover the difference in cost of production. "To maintain the *status quo* in the wool industry," he declared, "the minimum *ad valorem* rate necessary, even for high-grade wool in years of high prices, would be 35 per cent." The rates in the proposed measure would, consequently, cause great injury to business and much unemployment. The House on Aug. 13 passed the bill over the veto by a vote of 174 to 80, but the Senate refused to take further action.

The cotton schedule was also investigated by the Tariff Board and a synopsis of its report, together with a recommendation that duties be revised and reduced, was laid before Congress by President Taft in a special message on March 26. The Committee on Ways and Means, reporting on June 4 (U. S., 62d Cong., 2d sess., House rept. 829), repeated its criticism of the cost-of-production theory,

and again objected because the Board made no recommendations, presenting only the data collected, and leaving it to the reader to draw his own conclusions. The investigations of the Board were also declared to be so incomplete and unsatisfactory as not to warrant any change in the duties fixed by the Payne-Aldrich Act. It was further charged that the report was merely a "library compilation," adding little to information already in print, and that it had shifted its basis from the costs of the foreign producer, employed in the wool report, to foreign prices.

The bill presented (H. R. 25034) was identical with H. R. 12812, introduced at the first session of the 62d Congress. The latter, after being passed without change by both houses, was vetoed by President Taft, Congress being urged to wait for the report of the Tariff Board. The new bill passed the Senate with amendments but this time failed to reach the President.

The Tariff Board.—The reports of the Committee on Ways and Means of the Democratic House of Representatives on the work of the Tariff Board plainly showed hostility. As early as Dec. 7 the Tariff Board bill was voted down by a strictly party vote. The same bill had passed the House and Senate at the last session of the 61st Congress, but had been lost through a filibuster on a conference report. President Taft urged Congress to continue the life of the Board so that it could investigate the metal, leather, and chemical schedules and the Senate took action looking to its continuance. On June 7, however, it was finally eliminated by the House, by a vote of 72 to 47, and went out of existence on June 30 for lack of financial support.

Income Tax Amendment.—Thirty-four states have now ratified the proposed income tax amendment to the federal constitution, the number required to make the amendment valid being 36. Four of these (Arizona, Minnesota, South Dakota, and Louisiana) were added to the list in 1912. The lower house of the New York legislature on March 13, 1912, adopted a resolution rescinding its approval of the amendment given last

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC DEBT OF THE UNITED STATES, JUNE 30, 1912

Interest-bearing debt:	
4s, Loan of 1925.....	\$118,489,900
3s, Loan of 1908-1918.....	63,945,460
2s, Consols of 1930.....	646,250,150
2s, Panama Canal Loan, 1906..	54,631,980
2s, Panama Canal Loan, 1908..	30,000,000
3s, Panama Canal Loan, 1911..	50,000,000
2½s, Post. Sav. bonds, 1911...	41,900
2½s, Post. Sav. bonds, 1912...	417,380

Debt bearing no interest:	
United States notes (green-backs).....	\$346,681,016
National bank notes, redemption account.....	24,710,831
Old demand notes.....	53,282
Fractional currency.....	6,856,154

Total interest-bearing debt.....	\$963,776,770
Total debt on which interest has ceased.....	1,760,450
Total debt bearing no interest.....	378,301,284
Total certificates and notes issued on deposits of coin and silver bullion.....	1,524,535,369

Total debt, June 30, 1912.....\$2,868,378,873

Debt on which interest has ceased:	
Funded loans of 1891.....	\$28,650
Loan of 1904.....	13,250
Funded loan of 1907.....	800,350
Refunding certificates.....	14,050
Old debt.....	904,150

Certificates and notes issued on deposits of coin and silver bullion:	
Gold certificates.....	\$1,040,057,369
Silver certificates.....	481,549,000
Treasury notes of 1890....	2,929,000

year. The question of whether a state, having once ratified an amendment, can reverse its action came up in connection with the adoption of both the Fourteenth and Fifteenth Amendments and was then decided against the right to rescind. Apparently the weight of authority is at present against the right of a state to repudiate favorable action, although it may at any time withdraw a rejection. Following is the list of states which have ratified the proposed sixteenth amendment:

Alabama	Louisiana	No. Carolina
Arizona	Maine	No. Dakota
Arkansas	Maryland	Ohio
California	Michigan	Oklahoma
Colorado	Minnesota	Oregon
Georgia	Mississippi	So. Carolina
Idaho	Missouri	So. Dakota
Illinois	Montana	Tennessee
Indiana	Nebraska	Texas
Iowa	Nevada	Washington
Kansas	New York	Wisconsin
Kentucky		

Tax on White Phosphorus Matches.
—As the result of an agitation carried on chiefly by the American Association for Labor Legislation in the interest of industrial hygiene, Congress, by an act of April 9, 1912, made use of the taxing power to destroy the white-phosphorus match industry. The rate of the tax is two cents per hundred matches, and is to be paid by means of adhesive stamps. The act also forbids the importation of white-phosphorus match-

es after Jan. 1, 1913, and their exportation after Jan. 1, 1914.

The Public Debt.—The table at the top of this page gives a statement of the public debt as of June 30, 1912.

The Secretary of the Treasury notes in his annual report that the rate of 2½ per cent. originally fixed for postal savings bonds proved not high enough to keep them above par. When the quotations reached 92½ the trustees of the postal savings system arranged to take over at par any bonds depositors might wish to sell. (See also *Banking and Currency, infra.*)

STATE AND LOCAL FINANCE

Legislation in 1912.—The legislatures of only 15 states were in session during 1912. Arizona and Louisiana each held a special session in addition to the regular one, while Minnesota and Idaho held special sessions only. In but one state (Rhode Island) was legislation of special significance enacted. Matters of sufficient importance to receive mention in this brief review may be taken up in the alphabetical order of the states.

Arizona.—The financial provisions of the constitution of Arizona, admitted to statehood Feb. 14, 1912, are briefly as follows: Art. IX, on "Public Debt, Revenue, and Taxation," follows closely the provisions of other state constitutions. The

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

state debt is never to exceed \$350,000, except such as may be necessary for military purposes, and the state legislature is required to levy a tax sufficient to pay the interest and expunge the debt in 25 years. Local governments may not incur debt in excess of four per cent. of the taxable property, although with the consent of a majority of the electors it may be increased to nine per cent. to provide water, light, and sewers. The general property tax is adopted, but full power is given to levy income, inheritance, and corporation taxes. Special interest attaches to the tax clauses of the constitutions of Arizona and New Mexico for the reason that the conventions of both states were memorialized by the National Tax Association to secure a provision permitting the classification of property for taxation purposes. Arizona adopted the model clause recommended, but New Mexico, following the language employed in the constitutions of most older states, declared that "the rate of taxation shall be equal and uniform upon all subjects of taxation."

Idaho.—The Idaho legislature, in the first special session in its history, while retaining a provision that taxable property must be valued at full cash value, provided that it is to be assessed for taxation at 40 per cent. of this actual value. Land and improvements are to be assessed separately.

Massachusetts.—The Massachusetts inheritance tax law was amended so as to exempt the personal property of non-residents, only real estate situated in Massachusetts being taxable. The rates were increased, the exemption for direct heirs made larger, and the classification of heirs somewhat modified.

Minnesota.—The Minnesota legislature, in a special session of June 4 to 18, increased the railroad gross-earnings tax from four to five per cent. The change was ratified by the electorate, Nov. 5, by a vote of 184,612 to 41,130.

Mississippi.—In Mississippi a law was passed levying a "privilege tax" upon timber-land interests and on all transfers, with the exception of deeds of trust and real-estate mortgages.

An act approved March 16, 1912, levies a graduated tax of 5 to 20 mills in the dollar on all incomes in excess of \$2,500.

New Mexico.—The failure of New Mexico to provide in her constitution for the classification of property has been referred to above. The other financial provisions relate chiefly to the subject of state and local debts. State indebtedness for the ordinary expenses of government is limited to \$200,000. Debt for special purposes may be contracted, but only by a majority vote on referendum, and may not exceed one per cent. of the assessed value of property. Such special debts must also be accompanied by an annual tax levy to pay the interest and amortize the principal in 50 years. Municipalities must also provide sinking funds with tax levies sufficient to pay interest and principal of debt in 50 years, the total of such debt being limited to four per cent. of the assessed value of property.

New York.—Little tax legislation of importance was enacted in New York; only two changes need be mentioned here, one relating to the exemption of household furniture and personal effects, the other reducing the assessment of forest lands. Instead of an exemption limited to certain specified kinds of property of an aggregate value of \$250, "household furniture and personal effects to the value of \$1,000" are now exempt. Three laws were passed designed to encourage tree planting by reducing the burden of taxation.

Rhode Island.—Probably the most important tax legislation of the year was enacted by Rhode Island. In recent years Rhode Island has furnished the most conspicuous example of the application of the unmodified general property tax to corporations. Following the recommendations of a joint special committee on taxation laws, the legislature in 1912 applied the "corporate excess" system to ordinary business corporations doing business for profit in the state and imposed a gross earnings tax of one to three per cent. on public-service corporations. Banking corporations are not taxed on the corporate excess, but the shares of all trust com-

panies, state and national banks are assessed to the owners, though the bank must pay the tax directly. A permanent tax commission was also created, and intangible personal property, not subject to the corporate excess tax, is to be assessed at a uniform rate of 40 cents per \$100, the same rate as levied on bank shares and the corporate excess.

Constitutional Amendments in 1912.—Numerous constitutional amendments relating to taxation have been before the people of several states. A review of the changes proposed in state constitutions during 1912 would seem to confirm the two general tendencies pointed out by Professor Gardner in the 1911 YEAR BOOK (p. 301), viz., (1) "a movement toward the break-up of the general property tax; (2) the creation of a more effective administrative system in matters of taxation, brought about through centralized control of local assessments." (For latest returns available at the end of the year of the votes on constitutional amendments, see VI, *Amendments to State Constitutions*.)

The voters of Arizona on Nov. 5 ratified an amendment to the constitution, limiting the amount of debt which may under any circumstances be incurred by a county or school district to 10 per cent. of the taxable property. A city or town may, with the approval of the electorate, increase its debt from 5 per cent. to 15 per cent. to provide water supply, light, and sewers.

In California a home rule amendment was submitted to enable cities, counties, and other local taxing districts to raise revenue for local purposes in any manner the electors may choose. An amendment will be submitted to the voters of Kentucky at the general election in November, 1913, abolishing the uniform taxation of all property and permitting the legislature to decide what classes of property shall be subject to local taxation. In a special session the Louisiana legislature passed resolutions submitting 19 amendments to the electors in November. Eleven of the 19 were concerned with matters of taxation and finance. Three of the 11 were adopted Nov. 5, viz.: (1)

the exemption from taxation for 20 years of corporations organized for the sole purpose of lending money at not more than 6 per cent. interest on country real estate situated in Louisiana; (2) exemption from all taxation of the legal reserves of Louisiana life-insurance companies; (3) certain provisions authorizing and regulating the issuance of municipal refunding bonds. The amendments defeated at the polls on Nov. 5 were as follows: (1) general reorganization of the system of taxation and assessment; (2) exemption of new industrial enterprises and improvements made on land by immigrants from local taxes for ten years; (3) exemption of money in hand or on deposit; (4) exemption of homes; (5) a parish referendum for the release of cities and towns from parochial licenses and taxes; (6) exemption from taxation for ten years, under certain conditions, of new canals for irrigation, navigation, and power purposes; (7) refunding and settlement of state debt; (8) exemption from taxation for ten years of railroads constructed after Jan. 1, 1913.

Two amendments submitted by initiative petition were voted upon in Missouri at the general November election. One of these has attracted considerable attention because it was designed to establish a single tax on land and franchise values. The change was to be brought about gradually. Bonds, state and local, were to be exempt at once. In 1914 all other forms of personal property were to be exempted and poll taxes, business licenses, etc., to be abolished. In 1914 and 1915 improvements on land were to be taxed at only three-fourths of their assessed value, with a total exemption of \$3,000 on each household; in 1916 and 1917 at one-half, and in 1918 and 1919 at one-fourth of their value. After 1919 improvements of all kinds were to be wholly exempt, leaving land and public-utility franchises the only objects of taxation. The amendment specifically reserved the power to tax all franchises, privileges, and inheritances. The second amendment provided for a permanent tax commission of three members appointed by the governor.

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

The official canvass of the votes on the single tax amendment shows that it was overwhelmingly defeated and the opposition to the first amendment also secured the defeat of the permanent tax commission. The opponents of the single tax seemed to feel that a permanent commission would in some way serve as an entering wedge for the single tax.

A constitutional convention met in New Hampshire in June and proposed twelve amendments to be voted on in November. Three of the twelve related to taxation. One granted the power to tax in a special way growing timber, money at interest, incomes from the stock of foreign corporations, and from money at interest, except from deposits in New Hampshire savings banks; a second granted the power to levy graduated inheritance taxes; and the third permitted the levying of a tax on the incomes of public-service corporations and voluntary associations in lieu of the property tax. All three were decisively defeated at the polls on Nov. 5. The convention refused to strike from the constitution the word "proportional," which prevents classification.

A constitutional convention in Ohio also failed to give the voters a chance to abolish the uniform rule. So hostile, indeed, was the convention to classification that a clause was inserted in the initiative and referendum amendment prohibiting its use to secure the classification of property or single land taxes. It is not by any means clear, however, that the attitude of the convention accurately reflected public opinion in Ohio, for in 1908 an amendment permitting classification of property received 339,000 affirmative votes and only 95,000 negative. It failed then only because a majority of the votes cast at the election was required. The Ohio convention did propose several changes affecting taxation, all of which were approved at the polls on Sept. 3. Power was given to levy a uniform or progressive inheritance tax, with an exemption not exceeding \$20,000; a uniform or graduated income tax, with exemptions not to exceed \$3,000; excise and franchise taxes; and taxes upon the production

of coal, oil, gas, and minerals. At least 50 per cent. of the revenue from the inheritance and income taxes must be returned to the local governments. A poll tax has long been forbidden for state and county purposes; a section of the 1912 amendment forbids it altogether.

The electors of Utah voted at the general election in November on several constitutional amendments. The principal change proposed was the abolition of the rules of uniformity and proportionality. The board of equalization is to be given increased powers. Other sections proposed relate to the debt limit for cities, the payment of the state debt, and the taxation of mines. (See also VI, *Amendments to State Constitutions.*)

Court Decisions.—Among the important court decisions of the year the following may be mentioned: On Feb. 19 the United States Supreme Court, confirming a decision of the Supreme Court of Minnesota, held valid a Minnesota statute imposing a tax on the gross receipts of express companies (*United States Express Co. v. Minnesota*, 223 U. S., 335). It had been contended that the tax, which was to be in lieu of all other taxes on the property of the corporations within the state, was a tax on interstate commerce. The importance of the decision lies in the ruling that gross earnings may be used as a measure of taxation of corporations doing an interstate business. On the same day the Supreme Court held invalid an Oklahoma statute of 1910 (*Meyer, Auditor of the State of Oklahoma, v. Wells, Fargo & Co.*, 223 U. S., 298). The court held in this case that the tax was not simply laid on all the gross receipts of the business within the state, for it included income from investments and bonds outside the state.

On Jan. 9 the Supreme Court of Wisconsin held constitutional the graduated income-tax law passed in 1911. Various arguments against its validity had been brought forth. It was alleged to be unreasonably progressive; to result in double taxation; to violate the right of self-government, because the state tax commission had power to appoint as-

sessors; to grant unreasonable personal exemptions; and to discriminate against corporations. All of these contentions the court denied.

State Income Taxes.—From the revenue standpoint the Wisconsin income tax is considered a great success, yielding over \$3,300,000. In Milwaukee it is claimed it will yield enough to make possible the complete abolition of the personal-property tax. The law, however, is meeting considerable opposition, and may presently be repealed as a result of a complicated political situation. In Oklahoma the situation is very different. The state auditor reports that both the graduated land-tax law and the income-tax law have utterly failed as revenue measures. The income-tax law went into effect in May, 1908, and has not produced as much as \$5,000 in any year, although special efforts have been made to enforce it in the wealthier counties.

State Tax Commissions.—A permanent tax commission of three members has been authorized and appointed in Arizona. The Rhode Island tax act of 1912, as already noted, created a permanent tax commission. No less than six special investigating commissions have been at work during the year. In Connecticut public-service corporation taxes have been investigated by a commission of three members. In Kentucky a commission of five members is to report to the governor in 1913 and to the legislature in 1914 a plan for a general revision of the revenue and taxation laws. A commission is also to report in Maryland in 1913. In New Jersey a commission of five members has investigated the methods of assessment and will make a report to the legislature in 1913. Utah has a body of three members investigating taxation generally. A commission authorized in Louisiana in July reported to the special session of the legislature in August.

Taxation of Land.—Public opinion seems to be growing in favor of heavier taxation of land, with partial or entire exemption of improvements. The Missouri amendment to effect this has been mentioned above.

Various Canadian cities have abolished the tax on improvements and the movement has met with some success in Oregon and Washington. A bill was before the New York legislature in 1911, and again in 1912, which proposed gradually to reduce the tax rate on buildings so that in five years it should be only one-half the rate on land. The measure was brought forward by the New York Committee on Congestion of Population as a method of relieving overcrowded tenements.

Excess Condemnation.—The power of excess condemnation, or the right, when appropriating private property for public use, to take in excess of the minimum actually needed for the improvement, has recently been proposed in several states. One of the constitutional amendments adopted in Ohio on Sept. 3 gave the cities of that state this power, which they already had by Section 10 of the Municipal Code, but doubt as to the constitutionality of the statute suggested the desirability of a constitutional amendment. An amendment to the constitution of New York permitting municipal corporations when taking private property for public use to take also "additional adjoining or neighboring property" was defeated by the electorate in 1911. In 1912 the legislature again initiated the amendment, which has now to be ratified by the legislature of 1913 and then by the people. A resolution to amend the constitution so as to give the power of excess condemnation was passed by the Wisconsin legislature in 1911. It still remains to be ratified by the legislature of 1913 and later by the electorate. An amendment to the constitution of Massachusetts was adopted in 1911, enabling that commonwealth, or any of its municipal corporations, to condemn land in excess of the minimum required for an improvement, but with the limitation that such excess shall be no greater than is necessary to provide suitable building lots on both sides of the improvement. As in Ohio, an unused statute (P. L. 1904, ch. 433) existed prior to the adoption of the amendment. Statutes granting the power of excess condemnation are

found in Virginia (P. L. 1906, ch. 194); Connecticut (see city charter of Hartford, as amended in 1907); Pennsylvania (P. L. 1907, ch. 466); and Maryland (P. L. 1908, ch. 466).

The Report of the Commission on New Sources of Revenue, New York City.*—The Commission on New Sources of City Revenue appointed by Mayor Gaynor is the first official body to submit a comprehensive report on municipal revenues. The recommendation certain to attract most attention is that proposing to tax unearned increment in land values. The Commission has worked out a scheme for such a tax which is regarded as at once a model of simplicity and applicability to American conditions. The proposition, briefly stated, is to assess and tax annually all increment accruing in the future in the same manner that existing values are assessed and taxed. In the imposition of the tax no heed is paid to sale or transfer of title. In real-estate assessments in New York, site value is separated from the value of improvements. The Commission proposes to make the site value as determined by the Department of Taxes and Assessments for the year 1912 the standard by which to measure all future increment, the assumption being that the valuations fixed by this Department fairly reflect the current market values. Taxation of the increment in no wise exempts or relieves a parcel from payment of the ordinary real-estate tax, the new tax being an addition thereto, although imposed only on that portion of the site value accumulated after 1912. Increments arising from improvements such as grading, sewerage, paving, etc., the cost of which has been borne by the owner, are, to the extent of such costs, deducted from the increment assessed. The increment assessed in any particular year is, therefore, the difference between the site-value assessment for that year and the site-value assessment for the year 1912, after deducting the cost of improvements

made during the interim. The rate proposed is one per cent. a year.

Another measure recommended by the Commission is a tax on billboards. Billboard advertising is regarded as a privilege very much of the same nature as a franchise right and for the utilization of which the public is entitled to proper compensation. On this theory it is proposed to tax billboards in the same manner that some states now tax the intangible franchise value of public-service corporations. For the purpose of this tax the advertising value of a signboard is assumed to be proportionate to its area and to the site value of the real estate occupied, as fixed by the Department of Taxes and Assessments. The tax per square foot of signboard is at the rate of two per cent. of the assessed value per square foot of the site occupied.

Another important suggestion made by the Commission relates to financing the construction and equipment of large revenue-producing improvements, such, for instance, as subways and docks. To enable the city to undertake necessary schemes of this character, it is recommended that it be empowered to impose an extraordinary tax on real estate, the proceeds of which shall not exceed \$10,000,000 in any one year or more than \$50,000,000 in the total. In the payment of such special tax, each and every taxpayer is to receive a refunding receipt. The earnings of improvements financed in this way are to be allocated to a special trust fund, pledged not only to the payment of interest on these receipts but also to their payment and redemption in the serial order of their issue. As this trust fund, and not the city's credit, is made the sole pledge for the payment of these receipts and the interest thereon, they are not considered in the calculation of the city's debt limit. The considerable saving effected in interest charges by this method especially commends its use for the financing of large improvements.

The Commission also recommends that the city grant to individuals the private use of subsurface sidewalk or street space for the purpose

* For this brief statement in advance of the publication of the Commission's report the writer is indebted to Mr. Herbert S. Swan.

of vaults or tunnels only on terms of an annual rental proportionate to the value of the abutting premises.

Various other recommendations are made by the Commission. Among them are: excess condemnation; the reduction of the present tax on personal property to a low uniform rate of three mills; the amendment of the special franchise

tax; the extension and amendment of the license system; an increase in the amount of various fees; a more scientific management of prison labor; a more economical disposition of city wastes; and improved regulations governing the sale of unused property, owned by the city, and the disposal by the municipality of permits, leases, and concessions of various kinds.

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XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

BANKING AND CURRENCY

FRED ROGERS FAIRCHILD

STATISTICS OF BANKING

National Banking System.—There were in active operation on Oct. 31, 1912, 7,428 national banks, an increase of 97 since Oct. 31, 1911. The total number of new banks organized during this period was 188, made up of 62 conversions of state banks, 50 reorganizations, and 76 primary organizations. On the other hand, 91 banks went out of existence, 8 by failure and 83 by voluntary liquidation, leaving the net increase 97, as stated. This growth is somewhat less than in the preceding 12 months, when the increase was 113 banks.

The circulating notes of the national banks amounted to \$749,348,859 on Nov. 1, 1912, as compared with \$739,165,313 on Nov. 1, 1911. This is an increase of \$10,183,546, or 1.4 per cent., since Nov. 1, 1911.

The increase is absolutely and relatively somewhat less than in the preceding 12 months, when the increase was 2 per cent.

The change in the number of national banks in operation in different sections of the country is shown in the following table:

SECTION	Oct. 31, 1911	Oct. 31, 1912	Change
New England.....	466	460	— 6
Eastern states.....	1,641	1,654	+ 13
Southern states.....	1,469	1,492	+ 23
Middle states.....	2,044	2,055	+ 11
Western states.....	1,245	1,264	+ 19
Pacific states.....	462	499	+ 37
Island possessions...	4	4	.....
Total, U. S.....	7,331	7,428	+ 97

The development of the principal items of resources and liabilities of all the national banks is shown in the following table, taken from reports made to the Comptroller of the Currency:

	Sept. 1, 1911	Sept. 4, 1912	Increase	Per Cent.
Number of banks reporting..	7,301	7,397	96	1.3
Total resources.....	\$10,379,439,383.89	\$10,963,400,760.35	\$583,961,376.46	5.6
Loans and discounts.....	5,663,411,073.21	6,040,841,270.81	377,430,197.60	6.6
United States bonds.....	766,218,220.00	778,118,050.00	11,899,830.00	1.5
Specie and legal tender notes.	895,475,406.81	895,951,094.23	475,687.42	0.1
Capital stock and surplus...	1,695,482,951.60	1,747,034,032.71	51,551,081.11	3.0
National bank notes outstanding.	606,982,033.00	713,823,118.00	16,841,085.00	2.4
Individual deposits.....	5,489,995,011.98	5,891,870,007.00	401,874,995.02	7.3
U. S. Government deposits ¹ .	48,343,740.95	59,227,328.40	10,883,587.45	22.5

¹ Includes postal savings deposits.

State Banks.—A statement compiled by the Comptroller of the Currency shows the following facts regarding the principal items of re-

sources and liabilities of state banks in the United States on June 14, 1912, together with the corresponding figures for June 7, 1911:

	June 7, 1911	June 14, 1912	Increase	Per Cent.
Number of banks reporting....	12,843	13,381	538	4.2
Total resources.....	\$3,747,786,296.35	\$3,897,770,826.71	\$149,984,530.36	4.0
Loans and discounts.....	2,439,414,667.62	2,549,323,176.38	109,908,508.76	4.5
Cash in bank.....	236,662,497.38	241,756,724.48	5,094,227.10	2.2
Capital stock and surplus.....	623,511,621.86	636,374,248.83	12,862,626.97	2.1
Individual deposits.....	2,777,566,835.81	2,919,977,897.99	142,411,062.18	5.1

Private Banks and Loan and Trust Companies.—The principal items of resources and liabilities of private banks and loan and trust companies in the United States on June 14,

1912, are shown in the table below, together with the corresponding figures for June 7, 1911, being taken from a statement compiled by the Comptroller of the Currency:

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	June 7, 1911	June 14, 1912	Increase	Per Cent.
PRIVATE BANKS:				
Number of banks reporting...	1,116	1,091	—25	—2.2
Total resources.....	\$182,824,220.68	\$196,940,397.42	\$14,116,176.74	7.7
Loans and discounts.....	128,045,872.21	129,784,262.65	1,738,390.44	1.4
Bonds, securities, etc.....	9,869,645.22	14,113,458.33	4,243,813.11	43.0
Cash in bank.....	7,189,327.84	7,450,404.58	261,076.54	3.6
Capital stock and surplus.....	29,202,390.72	31,681,721.16	2,479,330.44	8.5
Individual deposits.....	142,277,224.21	152,494,618.90	10,217,394.69	7.2
LOAN AND TRUST COMPANIES:				
Number of companies reporting.....	1,251	1,410	159	12.7
Total resources.....	\$4,665,110,868.71	\$5,107,444,382.27	\$442,333,513.56	9.5
Loans and discounts.....	2,249,421,081.30	2,711,241,748.18	461,820,666.88	20.5
Bonds, securities, etc.....	1,114,778,687.06	1,221,128,370.59	106,349,683.53	9.5
Cash in bank.....	269,825,566.23	282,468,252.82	12,642,686.59	4.7
Capital stock and surplus.....	786,189,001.43	843,299,710.85	57,110,709.42	7.3
Individual deposits.....	3,295,855,895.27	3,674,578,238.92	378,722,343.65	11.5

Savings Banks.—The following statistics of mutual and stock savings banks in the United States on June 14, 1912, and June 7, 1911, are from statements compiled by the Comptroller of the Currency:

	June 7, 1911	June 14, 1912	Increase	Per cent.
MUTUAL SAVINGS BANKS:				
Number of banks reporting...	635	630	—5	—0.8
Total resources.....	\$3,762,401,625.61	\$3,929,091,986.91	\$166,690,361.30	4.4
Loans and discounts.....	1,809,680,214.95	1,920,256,975.33	110,576,760.38	6.1
Bonds, securities, etc.....	1,715,516,716.41	1,778,042,428.09	62,525,711.68	3.6
Cash in bank.....	15,791,646.85	16,186,061.29	394,414.44	2.5
Surplus fund.....	233,602,108.93	248,983,429.06	15,381,320.13	6.6
Individual deposits.....	3,460,575,072.17	3,608,657,828.11	148,082,755.94	4.3
STOCK SAVINGS BANKS:				
Number of banks reporting...	1,249	1,292	43	3.4
Total resources.....	\$889,911,677.01	\$993,631,303.72	\$103,719,626.71	11.6
Loans and discounts.....	605,591,964.03	669,246,257.55	63,654,293.52	10.5
Bonds, securities, etc.....	133,752,180.46	144,877,735.13	11,125,554.67	8.3
Cash in bank.....	26,616,639.93	29,266,002.56	2,649,312.63	10.0
Capital stock paid in.....	72,177,899.09	76,871,811.79	4,693,912.70	6.5
Surplus fund.....	28,231,974.53	31,052,596.37	2,820,621.84	10.0
Individual deposits.....	752,008,526.36	842,897,859.61	90,889,333.25	12.1

The geographical distribution of savings banks (both mutual and stock), with the number of depositors, the amount of deposits, and the average to each depositor, on June 14, 1912, as compiled by the Comptroller of the Currency, is shown in the following table:

	Number of banks	Number of depositors	Amount of deposits	Average to each depositor
New England states.....	417	3,464,083	\$1,426,805,782.95	\$411.88
Eastern states.....	244	4,193,658	2,070,306,703.46	493.67
Southern states.....	179	366,197	84,539,038.46	230.85
Middle Western states.....	852	1,206,967	410,778,398.77	340.33
Western states.....	58	67,592	14,378,477.94	212.72
Pacific states.....	172	711,807	445,010,121.30	625.18
Total, United States.....	1,922	10,010,304	\$4,451,818,522.88	\$444.72

Banking Power of the United States.—If we bring together all the banking institutions in the United States it appears that on June 14, 1912, the Comptroller of the Currency had reports from 25,176 banks. The aggregate amounts of their principal items of resources and liabilities were as follows:

Total resources.....	\$24,986,642,774.18
Loans and discounts.....	13,953,606,243.59
Bonds, securities, etc.....	5,361,240,096.48
Cash in bank.....	1,573,270,268.99
Cap. stock and surplus.....	3,595,823,612.14
Individual deposits.....	17,024,067,606.89

There were in addition about 3,800 banks, chiefly brokerage concerns, with aggregate capital estimated at

\$70,000,000, from which the Comptroller of the Currency is unable to obtain reports.

BANK EXAMINATION AND REGULATION

National Banks.—The Comptroller of the Currency, Lawrence O. Murray, has continued his efforts to secure a more effective examination of national banks and a stricter enforcement of the national banking law. During the past year he has succeeded in getting practically every national bank that had not already done so to adopt suitable by-laws, providing, among other things, for a careful examination by a committee of the bank's directors into its affairs at least twice a year, with a report to the directors, a copy of which is transmitted to the Comptroller's office.

In order to make the government examinations more effective, the Comptroller has ruled that in all country banks the board of directors must be convened when the bank is to be examined, and the examination must be made in their presence and with their cooperation.

Hereafter national bank examiners will be required to examine all banks in voluntary liquidation, the same as if they were going concerns, up to the time when creditors have been paid in full. Heretofore it has been the practice to pay no attention whatever to the bank as soon as the stockholders had passed a resolution placing it in liquidation. This practice has allowed delay and confusion and danger of loss to creditors.

The Comptroller has also undertaken to examine into the character of all companies controlled by officers or directors of a national bank and receiving loans from the bank. He will insist hereafter that the books of such companies be open to inspection by the bank examiner.

The Comptroller has made special efforts to induce the banks, especially country banks, to have their boards of directors composed of men, at least a majority of whom reside in the town where the bank is located. National-bank examiners have frequently found difficulty in

obtaining meetings of a majority of the directors to assist in the examination. Moreover, it is often important that the board of directors be quickly convened to take action in some emergency. For these reasons local residence of a majority of the board is considered necessary to sound banking. The Comptroller of the Currency now requires all newly organized banks to select directors, at least a majority of whom reside locally, and he urges all banks to adopt such a rule. In addition to thus doing what he is able by administrative action, the Comptroller has recommended that Congress pass legislation requiring a majority of the directors of every national bank to be residents of the place where the bank is located.

The administration of the Comptroller of the Currency has disclosed wholesale violation by national banks of the law limiting loans to a single person or corporation to 10 per cent. of the capital and surplus of the bank. For nearly 50 years the Comptroller's office has criticized national banks for their common practice of making excess loans; but, although the Comptroller has full power to remedy such violations, the statute has never been enforced. In January, 1906, it appeared from the reports of the banks themselves that 3,307 national banks, more than half of the total number, reported excess loans. A year later, 1,789 banks were still violating the law. The violations have decreased until the reports for April 18, 1912, showed 989 banks, or 13 per cent. of the total number, with excessive loans. On June 20 the Comptroller announced that all such loans in excess of the legal limit must cease by Sept. 1. The reports from national banks on Sept. 4 showed 526 banks reporting violation of the statute against excessive loans, being a marked improvement, although the situation still falls short of complete obedience to the law.

The Comptroller has also made special efforts to check the practice of allowing overdrafts by national banks. The highest point reached in the matter of overdrafts was in November, 1904, when the banks re-

ported overdrafts amounting to \$54,941,000, or nearly 1½ per cent. of their loans and discounts. On Sept. 4, 1912, although the number of banks had increased by one-third, the overdrafts were only \$20,000,000, being one-third of one per cent. of the loans and discounts.

The Comptroller has insisted during the year that all newly organized banks must pay in, at the time of organization, a substantial surplus in addition to the capital, in order that they may be able to meet running expenses without impairing the capital until such time as the bank begins to make profits. Another rule requires that each subscriber for the stock of a national bank, in process of organization, must be actually worth twice the amount of his subscription in order that he may be able to respond, if necessary, to the double liability in case of impairment of the bank's capital. This action is taken to stop the former practice by which individuals subscribed for large blocks of stock in newly organized banks for which they were unable to pay, their plan being later to peddle the stock out to other purchasers.

State Banks.—The movement toward more efficient regulation of state banking institutions has continued to make progress during the year 1912. Kentucky has enacted legislation creating a state banking department, under a commissioner with a deputy and three examiners. Examinations are to be at least twice a year. The cost of maintaining the department will be assessed upon the state banks in proportion to their combined capital and surplus.

The Attorney-General of New York has decided that the word "bank" may not be used by a private banker in the state who is not subject to the superintendent of banks and does not report to that officer. Similarly a constitutional amendment adopted in Ohio provides that the words "bank", "banker", or "banking" may be used by private banks only in case they submit to inspection by the state banking department. The Attorney-General has ruled, however, that this amendment

does not become effective until suitable legislation is enacted.

It has been held by the Attorney-General of the state of Kentucky that state banks will not be permitted to hold stock in other corporations as an investment. They may accept it temporarily as collateral security. The Attorney-General of Montana has ruled that private banks in that state are not permitted by law to purchase their own stock, or that of any other corporation, unless the purchase is necessary to prevent loss upon a debt.

The State Banking Commissioner of Texas has announced it to be the policy of his department to require that presidents of state banks and a majority of the directors reside in the town where the bank is located, or in the neighboring territory.

The State Treasurer of Georgia has decided that under an act of 1907 state banking institutions in the hands of receivers or in process of liquidation are subject to state examination and supervision the same as going concerns.

State Legislation.—Laws were passed during 1912 to punish the making or use of false statements to obtain property or credit by the states of Louisiana, New Jersey, New York, and Rhode Island.

Kentucky has enacted legislation creating a state banking department (see *State Banks, supra*).

An act was passed in New York permitting trust companies in villages and cities of the third class to hold only 30 per cent. of their 10 per cent. reserves in cash; formerly they were required to hold 50 per cent. of the reserve in cash. Another act required annual examination of savings banks, examinations every two years having been formerly required. An act to punish derogatory statements affecting banks was passed in New York.

Acts fixing the liability of banks to their depositors for payment of forged or raised checks were passed in Louisiana and Massachusetts.

An act relating to the payment of deposits in two names was passed by Virginia.

The uniform Warehouse-Receipts Act was passed by Louisiana.

CURRENCY REFORM

Report of the National Monetary Commission.—Little progress was made during the year toward reform of the currency system. The National Monetary Commission, as directed by the Act of Aug. 22, 1911, made its final report to Congress on January 8. The report followed closely the revised plan issued by Senator Aldrich in October, 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 304). It contained an analysis and argument in favor of the proposed plan, with the text of a bill to put it into effect. This bill differed in only a few particulars from the plan already published.

The most important change is a provision intended to restrict the power in the local associations of chains of banks united by stock ownership or through holding companies; it is provided that, in the election of the board of directors of the local associations:

In case 40 per centum of the capital stock in any subscribing bank is owned directly or indirectly by any other subscribing bank, or in case 40 per centum of the capital stock in each of two or more subscribing banks, being members of the same local association, is owned directly or indirectly by the same person, persons, copartnership, voluntary association, trustee, or corporation, . . . neither of such banks shall be entitled to vote separately, as a unit, or upon its stock, except that such banks, acting together, as one unit, shall be entitled to one vote for the election of the board of directors of such local association.

The following minor changes are also made: A trust company is eligible to membership in places with a population of 6,000 or less, provided it has a capital of \$50,000 or more. In the Aldrich plan the minimum capital for trust company members was \$100,000, for companies located in cities with 25,000 inhabitants or less.

Slight changes are made in the provisions regarding the election of directors of the branches of the National Reserve Association. These changes, however, do not materially affect the principle of the Aldrich plan.

In the Aldrich plan national banks were allowed to maintain separate savings departments, and to lend not more than 40 per cent. of their savings deposits on real-estate security. This authority to maintain savings departments is omitted in the bill, but national banks are allowed to lend not more than 30 per cent. of their time deposits upon real-estate security.

To the section regulating the cash reserve of the National Reserve Association is added the restriction that no more notes may be issued by the Association when its cash reserve falls below 33 1-3 per cent. of the notes outstanding.

The life of the National Monetary Commission terminated in accordance with law on March 31.

Discussion and Criticism.—Discussion of the plan was more or less active during the year, though somewhat cast in the background by the Presidential campaign. The National Citizens' League, organized in 1911 to promote currency reform along the lines of the Aldrich plan, was the leader in the advocacy of the Commission's bill. The American Bankers' Association also took an active part in favoring the plan. At its annual convention in New Orleans, in November, 1911, resolutions indorsing the Aldrich plan were adopted by a practically unanimous vote. At its annual convention held at Detroit in September, 1912, the Association was less outspoken in favor of the plan, contenting itself with the general resolution:

That this Association will cooperate with any and all people in devising a financial system for this country which shall place us on a par with the other great commercial and competing nations; a system which shall give to the American people, of all classes and conditions, the financial facilities and industrial advantages to which they are entitled.

Numerous meetings of state bankers' associations, chambers of commerce, and other financial and commercial bodies have discussed the bill and generally expressed approval. Adverse criticism from individual writers or speakers has not been

wanting. Such criticism has either opposed the whole plan as unsound or has sought to amend certain of its features. No unity of opinion has appeared from the discussion, nor has any other definite plan gained any standing as a rival of the bill of the Monetary Commission. An important contribution to the discussion was a book entitled *Banking Reform*, edited by Prof. J. Laurence Laughlin and published by the National Citizens' League.

The bill of the Monetary Commission received practically no attention from Congress during the year, and no legislation upon the subject was enacted. Although the matter of currency reform was referred to in the platforms of all three national political parties, the Monetary Commission's bill did not become an issue in the campaign. The Republican platform made no mention of the bill. Opposition to the bill was expressed by the Democratic and Progressive parties. However, the statements of all three parties were couched in vague and general terms, and during the campaign the legislation proposed by the Commission was practically ignored.

Currency Associations and Emergency Circulation.—On March 28, 1912, a national currency association, in accordance with the provisions of the Aldrich-Vreeland Act of 1908, was formed at Los Angeles, Cal. This was the only association formed up to October. It brought the number of such associations up to 18. No notes have as yet been issued under the Aldrich-Vreeland Act.

THE "MONEY TRUST" INVESTIGATION

An investigation into the business of the banks of the country by a committee of the House of Representatives attracted much attention during the year. On Feb. 24 the House of Representatives passed a resolution directing its committee on banking and currency to make an investigation into banking and currency conditions. One purpose of this investigation was stated to be the gathering of information to aid

in framing legislation along the lines of the report of the National Monetary Commission. A second purpose was to ascertain whether or not the banking business of the country was coming to be so concentrated in the hands of groups of financiers in New York and other cities as to give these interests control over the monetary system of the country, the exchange market, interest rates, etc., with the power to create or avert panics, etc. In brief, this part of the inquiry, which later proved to be the main purpose of the investigation, was to discover whether or not there existed a so-called "money trust." A resolution extending the powers of the committee in respect to this inquiry was passed by the House on April 25.

Soon after this the committee sent out to all of the banks of the country blanks calling for answers to a variety of questions regarding their condition and character of business. Among other things, this inquiry asked for information from each bank regarding the stocks, bonds, and other securities owned by it, securities purchased from its own officers, loans to financial institutions and individuals secured in whole or in part by stocks of financial institutions, details regarding syndicate or underwriting operations, details regarding demands to or from other banks and regarding miscellaneous resources and liabilities, detailed information regarding the bank's officers, directors, and stockholders, their holdings of stock and loans to them, and complete information regarding all connections between the bank and affiliated or associated financial institutions including banks previously merged either directly or indirectly.

This inquiry was directed not only to national banks, but also to state banks, mutual savings banks, private banks, and loan and trust companies. Serious objection was immediately raised on the part of numerous banks, the chief ground being that an answer to such inquiries would disclose confidential relations between the bank and its customers and facts regarding the private business of customers which the banks

were not entitled to make public. Question was also raised as to the legal authority of Congress to compel answers to such questions, or to conduct an investigation such as was contemplated. Controversy over this point continued throughout the latter part of the Spring and during the Summer. To set this question at rest a bill was introduced in the House to amend the national banking law in such a way as specifically to give Congress, or either branch, the right to investigate national banks. This bill was passed by the House of Representatives on May 18. The bill was adversely reported, however, by the Senate committee on finance, on July 29, and failed to receive further consideration.

The attempt to secure information from the banks was, therefore, not pressed further. The committee held public hearings in June, during which an investigation of the New York Clearing House was made, which attracted some attention. Further hearings were suspended before the middle of June, partly on account of the approaching campaign and partly in order to await the decision as to the legal authority of the committee. Up to the first of December little information of importance had been secured. The committee resumed its sittings Dec. 9. (See also I, *American History*.)

POSTAL SAVINGS SYSTEM

Development of the System.—The postal-savings system of the United States, inaugurated in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 308), has been rapidly extended and has made a steady growth during 1912. Practically all of the post offices of the first, second, and third classes having been designated as savings depositories, the Postmaster-General began in the spring of 1912 to extend the system to fourth-class offices. On Nov. 1, 1912, there were in operation postal savings depositories in 12,167 post offices, besides 645 branch offices and stations, making a total of 12,812 offices where postal-savings business could be transacted. These included practically all the offices of the first, second, and

third classes, besides 4,004 fourth-class offices. On Nov. 1, the number of depositors was about 300,000, and the amount of deposits approximately \$26,000,000. A ruling of the Postmaster-General has permitted depositors to place their funds in any post office; the previous ruling being that no person might open a savings account in any post office of which he was not a patron. Each depositor must, however, confine his deposits to a single office.

Exchange of Deposits for U. S. Bonds.—A serious situation in the working of the system arose during the closing months of 1911. The law allows depositors to exchange at par the whole or any part of their deposits for United States bonds bearing 2½ per cent. interest. This exchange may be made on Jan. 1 and July 1 of each year. On July 1, 1911, \$41,900 of such bonds were issued to depositors. A difficulty, apparently unforeseen, arose when a certain depositor undertook to sell his bonds and found that the highest bid obtainable was at a price of 92½. The serious situation thus created was at once taken under consideration by the trustees of the postal-savings system, and on Nov. 17, 1911, it was announced that the Government had decided to purchase at par all postal-savings bonds offered by holders compelled to relinquish them. The first redemption of bonds under this ruling was made on Dec. 8, 1911, when two \$100 bonds were purchased at par. This ruling has removed the danger of loss by depositors who transfer their deposits into bonds, and amounts to a guarantee by the Government that the bonds will never be worth less than par.

Up to the end of 1912 three semi-annual issues of postal-savings bonds had been made in exchange for deposits. The first issue on July 1, 1911, amounted to \$41,900; on Jan. 1, 1912, \$417,380, and on July 1, 1912, \$854,860, making a total issue of \$1,314,140.

Deposit of Funds in State Banking Institutions.—It has been held that under the law regarding the deposit of postal-savings funds in local banks, trust companies doing a bank-

ing business and savings banks, including mutual savings banks, may qualify as depositories. Some difficulties have arisen, however, in the case of savings banks. For example, the Attorney-General of the state of New York has held that savings banks are not authorized to treat postal-savings funds as preferred deposits, through pledging their securities to guarantee repayment of such deposits, as is required under the postal-savings law. Moreover, the postal-savings law requires that depositories agree in advance to pay 2½ per cent. interest on such deposits. The Attorney-General holds that a savings bank is not authorized to guarantee interest on deposits in advance.

Receipt of postal-savings funds is also restricted in New York by the law which limits the deposit of a society or corporation in a savings bank to \$5,000. In New Jersey, also, \$5,000 is the limit of deposits which may be made to the credit of any one person. Many other states have similar limits. In these states, therefore, savings banks designated as postal-savings depositories cannot receive more than this maximum of postal-savings funds.

Somewhat similar difficulties have arisen in a number of western states whose banking laws forbid any state bank pledging its securities for deposits. This restriction has been avoided, however, by the banks of Wisconsin and South Dakota. Instead of the banks themselves depositing their own securities, the postal-savings officials have agreed to accept securities belonging to stockholders or officers of the institution. The Michigan legislature has passed an act authorizing its state banks to pledge their securities, and Massachusetts, whose restriction applied only to trust companies, has passed a similar act authorizing such companies to pledge their securities.

Indirect Results of the System.—In other ways the postal-savings system is having its effect upon the banking legislation and administration of many states; for example, the postal-savings bank trustees will not accept as a depository a state

bank in a state which does not have inspection of its banks. In such states, therefore, only national banks are designated as depositories. This has acted as an inducement to hasten the development of state inspection systems in a number of instances.

Indication that the postal savings bank is accomplishing one of the objects for which it was created is shown in the decline in foreign money orders. Whereas during the past ten years there has been an increase in the value of foreign money orders, amounting to approximately 500 per cent., the first six months of 1912 showed a decrease of \$7,653,634.74, as compared with an increase of \$9,318,085.28 for the first half of 1911.

The director of the Postal Savings Bank has urged that the limit upon deposits by an individual be removed. The law restricts deposits by one person to \$100 per month, and the total balance of any one depositor to \$500. In removing these limits the director would add the proviso that no interest shall be paid on any sum greater than \$1,000. During the history of the system many depositors have been turned away who sought to deposit sums greater than the legal limit. In one case it is reported that an individual sought to deposit the sum of \$30,000 at one time.

BILLS OF LADING

Cotton Bills of Lading.—The controversy over bills of lading used in financing American cotton exports has continued to agitate the parties interested during the year 1912. The problem arose through the failure of two southern cotton firms in April, 1910, which disclosed an extensive use of forged and fraudulent bills of lading. The discussion during 1911 led to the establishment in New York City of a central checking office known as the Cotton Bills of Lading Central Bureau, which was put into operation in the fall of 1911, in spite of vigorous opposition by the southern bankers and cotton dealers (see *AMERICAN YEAR BOOK*, 1911, p. 212). This opposition has continued throughout the past year, and the Central Bureau has also

failed to secure the unanimous support of the New York bankers.

Accordingly, late in January, 1912, delegates representing the European bankers and cotton dealers visited this country and conferences were held with the American interests at New York and Memphis. At the former conference, attended by representatives of the New York bankers engaged in buying cotton exchange, resolutions were adopted commending the Central Bureau and offering support to the effort to make it a complete success. The Memphis conference, on the other hand, gave expression, in resolutions adopted, to the bitter opposition of the representatives of the southern bankers, exporters, and cotton dealers. A committee was appointed at this conference to confer with the English representatives with a view to devising some other method of solving the problem.

The plan favored by the southern representatives was the establishment of a bureau of information located in Liverpool, and furnishing to European buyers information regarding the credit and reliability of American firms. This suggestion was favorably considered by the European representatives, and in August announcement was made of the establishment of an information bureau, to be maintained in Europe entirely within the control and under the management of the European cotton-buying interests. The function of this bureau is to obtain all necessary information regarding the reliability and financial standing of American firms with which the European bankers and cotton buyers have dealings.

There has been some question as to whether the Central Bureau at New York would be continued in view of the establishment of the new office in Europe. The European representatives, however, have announced their desire that the New York office be continued and its operations have gone on up to the end of the year, at which time it was doing a business of considerably greater volume than in 1911. (See also XIII, *Economic Conditions and the Conduct of Business.*)

Movement to Safeguard Bills of Lading.—The campaign for legislation to regulate the issue of bills of lading which has been carried on for the past few years has been vigorously pushed during 1912, especially by the American Bankers' Association. The movement seeks first the passage of a uniform bill of lading act by the legislatures of the several states. Such an act was drawn up and recommended by the Commissioners on Uniform State Laws. It aims in particular to prescribe forms for bills of lading and to fix the responsibility of carriers for bills of lading issued by their agents. Up to the end of 1911 this bill had been passed by nine states. In 1912 the state of Louisiana passed the bill, and it is at present in force in these ten states: Maryland, Massachusetts, Connecticut, Illinois, Iowa, Michigan, New York, Ohio, Pennsylvania, and Louisiana.

At the same time efforts have been made to secure the passage by Congress of a similar bill designed to make the bill of lading a reliable security in the hands of bankers and others who advance funds upon it. The most serious defect to be remedied is the present common-law doctrine, which allows railroads to escape responsibility in cases where bills of lading are issued by their agents without the actual receipt of the goods, this action being taken by the agent either fraudulently or as an accommodation to the shipper. This practice has made the bill of lading less reliable as security and has led to serious losses on the part of bankers and others. A bill designed to correct the most serious evils was passed by the House of Representatives in 1910. On Aug. 21, 1912, the Senate passed the Pomerehne bill, which is a complete law covering the whole subject of bills of lading, similar to the uniform law passed by a number of the state legislatures. Action on this bill, however, was not taken by the House.

GUARANTEE OF BANK DEPOSITS

The subject of deposit guarantee, which was very prominent in 1911

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(see *AMERICAN YEAR BOOK*, 1911, p. 309), has attracted relatively little attention during the year 1912, and few developments of importance are to be recorded.

In Wisconsin a plan has been provided for insuring deposits in state banks in conformity with a law passed in 1911 permitting such insurance. The plan, drawn up by a committee of the Wisconsin Bankers' Association, proposes to organize an insurance company under the supervision of the state insurance commissioner, the state bank examiner, and the federal Comptroller of the Currency. Membership in the company would be optional. Such banks as applied would be examined and, if found in satisfactory condition, would be given insurance covering their deposits for a premium of 25 cents on each \$100 of deposits.

The bill passed in 1911 by the Colorado legislature, providing for a deposit-guarantee system, but requiring that the plan be submitted to a referendum vote of the people at an election in 1912, has been declared by the District Court at Denver to have been illegally passed. As a result, the bill was not submitted to the referendum vote and has therefore failed to become effective.

In Oklahoma an examination of the books and accounts of the State Banking Board from the beginning of the state bank-deposit guarantee law up to Sept. 30, 1911, has been made and a report thereon was transmitted to the governor on Sept. 17, 1912. The report shows considerable laxity in the management of the guarantee fund, particularly in connection with the failure of the Columbia Banking and Trust Co., of Oklahoma City, which failed in September, 1909. A net loss of at least \$88,000 from the operations of the fund is shown.

SAVINGS BANKS

For some years past the situation of the savings banks of the country has been seriously affected by the rising rate of interest, with the resulting depreciation in the market value of securities held by them which were purchased in the past on

a lower interest basis. The result has been a decline in the value of the surpluses of savings banks generally throughout the country, bringing many banks to a situation that is considered critical. As a result, the past year has witnessed efforts to enforce, by legislation and otherwise, the maintenance of sufficient surplus by savings banks. Another result of the fall in market value of savings-bank investments has been a widespread movement to lower the rate of interest paid on savings deposits until such time as a reasonable surplus shall have been accumulated. A large number of the leading banks of New York, Massachusetts, and other states have reduced rates, generally from 4 to 3½ per cent. Statistics gathered in the city of New York, where about half of the banks have thus reduced rates, seem to show, from a comparison of the banks whose rates have been reduced with those that have maintained rates, that no serious loss of business has been occasioned by the reduction, depositors apparently regarding the increased safety as a sufficient offset to the lower rate of interest.

AGRICULTURAL CREDIT

A movement for the establishment of better facilities for agricultural credit has gained considerable headway during the year. Publicity has been given to the fact that American farmers are obliged to pay very much higher rates of interest, commissions, etc., upon farm loans than are paid for corresponding loans by the farmers of European countries.

Investigation of the systems of agricultural credit prevailing in Europe has been carried on during the year by the American diplomatic and consular representatives. The President of the United States has devoted considerable attention to the matter. Besides directing the European investigation, he sent letters on Oct. 11 to the governors of the several states calling the matter to their attention, and urging that action be taken, by uniform state laws if possible, toward establishing cooperative mortgage associations

along the lines of the German system.

Interest in the subject is evidenced by a considerable number of publications in the periodical press, and by platform statements of the Republican and Democratic parties in the Presidential campaign, both parties calling attention to the need of better facilities for agricultural credit; the Republicans further urging state and federal legislation for the establishment of suitable credit agencies, while the Democrats favored legislation permitting national banks to make loans on real-estate security. In this connection it is interesting to note that the bill of the National Monetary Commission proposes to give authority to national banks to make limited loans upon real-estate security.

BILLS OF EXCHANGE

An important international conference was held in the summer of 1912 at The Hague for the formulation of plans leading to the adop-

tion of a uniform law regarding bills of exchange and checks. The first conference on this subject was held in 1910, and the conference of 1912 was a continuation of the work begun at the first conference. The conference prepared a law on the bill of exchange which the Continental powers participating are to be asked to enact. Great Britain and the United States, although represented in the conference, will be unable to accept the uniform law on account of the fundamental differences between their legal system and that of the European and Latin American countries.

With regard to the check, the conference laid down a series of principles which it recommended to the powers for consideration, but without drawing up a detailed law. These recommendations are in line with recent European steps toward popularizing the check and adding to its safety and convenience, in particular the increasing use of the crossed check.

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INSURANCE

LIFE INSURANCE

WENDELL M. STRONG

Problems.—There are no special problems of importance which have come to the front during 1912. One which has attracted considerable attention and interest is the continuing one involved in policy loans. A development looked upon with regret by those most familiar with life insurance is the increase from year to year in the number and amount of loans on policies. This increase takes place in all companies and all sections of the country. There is a real evil in it as regards both the interest of the individual policy holder and the interest of the great mass of policy holders, that is, the company. As regards the individual policy holder the evil is that, when a policy is once borrowed on, there is a probability that the loan will never be paid off and that, finally, the policy itself will be allowed to go in settlement of the loan. If most of the loans were taken in the beginning to pay premiums which otherwise could not or would not be paid, there would be no bad result attributable to the loan; for, even if eventually the policy had to be allowed to go, it could not have been continued had there been no loan; but it is believed in insurance circles that most loans are not taken under such conditions. They are taken thoughtlessly when the money obtained through them is not necessary, and, when obtained to pay premiums, it is frequently not because the premium could not otherwise be paid, but because it is easier, for the time being, to borrow than to save the necessary amount. Thus the policy is loaded with interest charges in addition to the premium and finally is allowed to lapse or is surrendered and the holder is left without insurance. As regards the company the evil is the large

amount of insurance which goes out of force because it had been borrowed on; this results in the necessity of spending money in commissions to agents and other expense to replace the insurance thus lost. The right to borrow, however, is a feature of modern policies which will not be given up, because both public sentiment in general and the statutes of certain states require the agreement to loan as part of the policy contract.

Another question in connection with the right to borrow or to surrender for cash is whether this constitutes a danger to the company in time of financial stress when money is difficult to obtain. It has been thought that the obligation to pay the amount of the loan or cash-surrender value as soon as the necessary clerical work could be performed might occasion loss to a company, either indirectly, from the necessity of keeping large sums on deposit or in securities which could readily be turned into cash even in times of financial panic, or directly through having to sell ordinary securities at a sacrifice. This problem has attracted considerable attention from the insurance commissioners, some of whom are in favor of requiring, by statute, a provision in policy contracts that the payment of loan or surrender values may, at the option of the company, be deferred for 60 or 90 days. This would accord with the provision in New York regarding the withdrawing of deposits from savings banks. The experience, however, of the New York companies during the panic of 1907 did not indicate that the demand for loans would be as serious a danger as might be anticipated. While the demand during the panic was unusually heavy, it did not reach gigantic proportions.

Growth of the Business.—The years 1911 and 1912 have seen a contin-

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uation of the rapid, and at the same time healthy, growth of the business that has taken place continuously since the low point reached immediately after the Armstrong investigation. The history of these years is uneventful because there have been few special incidents and simply healthful, vigorous progress. The progress has been not only in growth in amount of insurance but also in the reduction of the cost of the insurance to the policy holder by the increase of annual dividends in many companies, whereas in no company of importance have the annual dividends been decreased. A few new companies have been formed, but the formation of new companies is not a matter of much importance, since few of them permanently succeed, and, with those that do, it requires a long time to reach a position of relative importance. The real question of progress is the history of those companies which are already well established, and with these, as indicated above, there has been, almost without exception, substantial progress during both the years 1911 and 1912.

Statistics.—Statistics for the year 1912 are not obtainable until some time after the end of that year, but

it is generally known that the largest companies will, each of them, write considerably more new business than in any year since 1905, and it is expected that the total new business for the New York Life will be between \$190,000,000 and \$200,000,000, and for the Mutual and the Equitable in the neighborhood of the legal limit of \$150,000,000 each. Tables are given below showing in detail the most important items as totals for the companies of the United States for the year 1911, and also for several previous years in order to show the changes. Perhaps the most striking thing about these statistics is the magnitude of a business which, compared with banking or ordinary commercial or manufacturing lines, is but little known or understood by the general public. A gratifying feature is that lapses and surrenders continue small in amount as compared with seven or eight years ago.

The statistics in the tables for life insurance, industrial insurance, and fraternal insurance are mostly taken from the *Insurance Year Book*. The magnitude of the figures involved is seen from the fact that in all these tables results are given in numbers of millions.

STATISTICS OF LIFE INSURANCE
(United States Companies)

YEAR	No. of companies	End of Year		Premiums received ² (millions)	Total income ² (millions)	Total payments to policy holders ² (millions)	Total disbursements ² (millions)	New business ² (millions)	Amount in force at end of year ² (millions)
		Admitted assets ¹ (millions)	Surplus ¹ (millions)						
1911.....	239	4,163	603	632	834	414	569	2,101	14,577
1910.....	211	3,874	557	593	779	387	540	1,846	13,233
1909.....	189	3,643	545	565	748	360	505	1,694	12,513
1908.....	161	3,399	484	545	704	336	468	1,481	11,873
1907.....	156	3,065	344	532	678	304	439	1,363	11,504

¹ Includes amounts set apart for payment of dividends to policy holders during following year.

² Includes industrial business in 30 companies.

³ Does not include industrial business.

SURRENDERS, LAPSES, LOANS AND DIVIDENDS
(Life Companies Reporting to State of New York Only)

YEAR	No. of companies	Amount of policies surrendered (millions)	Amount of policies lapsed (millions)	Policy loans (millions)	Dividends to policy holders (millions)
1911.....	34	252	325	507	75
1910.....	33	236	277	465	72
1909.....	35	250	270	420	73
.....	35	250	314	390	71
.....	37	213	307	326	55

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State Insurance.—The state of Wisconsin has, at the end of the year 1912, put into operation a state insurance scheme. It is to be controlled by the state, but its obligations are not to be guaranteed by the state. Its originators believe that the saving in agents' commissions and salaries of officials will make the insurance cheaper to the policy holder than in regular companies. Whether it will prove so will depend on whether, with the selection against the company among applicants who present themselves for insurance, without a corps of trained examiners, and without officials experienced in the selection of risks, a high mortality can be avoided, and whether, without the services of agents, a sufficient amount of insurance will be written to make

the expense rate low even when agents' commissions and salaries to officials are eliminated. The premium rates are low, too low to leave much margin for unexpectedly high mortality. The experiment will be watched with interest. If it proves a success it will be the first really successful attempt to write insurance without agents.

Industrial Insurance.—The history of industrial insurance in the years 1911 and 1912 has been uneventful. In the year 1910 there was a slight setback in the total amount of insurance written. In the year 1911 there was, on the other hand, a slight gain which was participated in by two of the three largest industrial companies. In each year of recent years the total amount in force has increased largely.

INDUSTRIAL INSURANCE
(United States Companies)

YEAR	No. of companies	New business (millions)	Insurance in force at end of year		Premiums received (millions)	Losses paid (millions)
			No. of policies (millions)	Amount (millions)		
1911.....	32	785	24	3,423	183	50
1910.....	22	749	23	3,179	171	47
1909.....	22	806	21	2,967	157	42
1908.....	20	606	19	2,668	144	39
1907.....	18	575	18	2,576	139	38
1906.....	19	631	17	2,451	130	34

Fraternal Insurance.—The year 1912 has shown some of the difficulties that beset fraternal insurance and, at the same time, has been signalized by the attempt of some of the most important fraternal orders to attain a sound basis. This is generally in the form of an attempt to fulfill the requirements of the so-called "Mobile bill"; the most important of which are described below:

Chief among such orders is the Modern Woodmen of America, by far the largest of all fraternal insurance orders. Early in January a representative convention of the order was held at Buffalo, when new rates were adopted, based upon a mortality table founded upon the order's own experience and four per cent. interest. These rates called for much higher contributions than the old assessment plan, though they are much lower than rates based upon

the National Fraternal Congress Table and four per cent. interest. Although these rates were adopted by the affirmative vote of a large majority of the delegates, they have met with considerable opposition from the rank and file, as was to be expected. The rates became applicable to new members on May 1, 1912, but do not apply to old members until Jan. 1, 1913. Nevertheless, in the first six months of 1912 about 200,000, or nearly 20 per cent., of the members withdrew. At the same time sufficient new members were taken in to make the net loss 133,000 members. This withdrawal from membership illustrates one difficulty that meets fraternal orders when the attempt is made to advance rates to an adequate basis.

Another is shown by the fact that in several states the dissatisfied members have secured legislation

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with a view to defeating the change of rates. In Illinois a new law provides that, when new rates are adopted, on the application of ten per cent. of the membership of the order the question of the new rates

must be submitted to a vote of the entire membership, but an adverse vote by a majority of the existing members (not merely a majority of those voting) is required to defeat the new rates.

FRATERNAL INSURANCE (United States Orders)

YEAR	No. of orders	Assessments (millions)	Total income (millions)	Claims paid (millions)	Total disbursements (millions)	Assets, end of year (millions)	New business (millions)	End of Year	
								No. of certificates in force (millions)	Amount in force (millions)
1911.....	396	117	130	92	111	148	1,200	10	9,839
1910.....	497	114	128	92	110	129	1,331	8	9,562
1909.....	645	96	112	89	104	117	1,203	7	8,920
1908.....	547	104	115	84	98	104	1,120	7	8,438
1907.....	543	98	116	81	96	85	1,212	7	8,079

The "Mobile bill" has now been enacted in its original form by 13 states, and with slight modifications in three states, making 16 in all, while in at least 25 states newly organized orders will not be licensed, and no orders will be newly admitted unless their rates are equal to the requirements of the National Fraternal Congress Table and four per cent. interest.

While the "Mobile bill" does not attempt to fix the net rates for any order, the valuation requirements will necessitate the adoption of adequate rates. The bill makes it incumbent upon all fraternal societies to submit to a valuation of assets and liabilities on Dec. 31, 1912. The results of this valuation must be furnished to each member of the order, but need not be included in the annual statement. The valuation made five years later, on Dec. 31, 1917, must be reported to the insurance departments, and if the admitted assets at that time are less than 90 per cent. of the reserve and other liabilities, such deficit must show a reduction of at least five per cent. at each triennial valuation thereafter. Valuation is not to be a test of solvency so long as the deficit is reduced in accordance with this requirement, thus allowing a period of many years in case of a serious deficit in which to attain technical solvency.

An effect of the changes being brought about will doubtless be that, at the end of 1912, the total business will be less than that in force at the end of 1911.

A striking illustration of the history of fraternal orders in the past is given by the fact that of 86 listed in *The Pocket Register of Life Associations* for 1893 as doing business in 1892, only 45 were still in existence in 1911. This indicates that nearly half of the associations in existence 20 years ago had failed or been reinsured by the end of 1911.

PROPERTY AND CASUALTY INSURANCE

S. S. HUEBNER

Fire Insurance.—As was the case during 1910, the fire-insurance business showed a normal growth during the year 1911, although, as in the preceding year, a heavy fire waste caused underwriting profits to be comparatively small. As regards 621 companies and Lloyds organizations, whose business is fully reported in the 1912 issue of the *Insurance Year Book*, the risks covered amounted to \$46,276,992,650, or an increase of \$3,153,000,000 over 1910. The net premiums of these companies in 1911 aggregated \$358,623,904, or only \$6,187,000 in excess of those collected in 1910, while the total income amounted to \$392,966,986, or

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only \$7,309,000 more than in the preceding year. Paid-for losses, on the other hand, totaled \$184,917,500, or an increase of \$16,544,000 over those of 1910, while paid-for expenses also increased by \$4,596,000. Thus, as regards underwriting profits, the showing is not as favorable as might be wished for. The aggregate dividends paid, as reported in the *Insurance Year Book*, were over \$2,500,000 less than in the year 1910. As regards the capital of these companies, however, an increase of nearly \$3,000,000 is shown, and the net surplus was increased by over \$19,000,000.

According to the 1912 report of the superintendent of insurance of New York, the summary of business during 1911 for the 213 fire and marine-insurance companies doing

business in the state of New York shows the heavy underwriting loss of approximately \$9,000,000. Aggregate premiums, according to the report, show a distinct falling off, and a large increase occurred in the ratio of losses. The total income of these companies was \$354,246,767 and disbursements, \$320,314,325, an increase as compared with 1910 of \$21,925,536 in income and \$27,287,159 in disbursements. The paid losses of the companies increased over the previous year by about \$16,000,000; and the underwriting gain of the 213 companies reporting to the department was slightly over \$9,000,000 less than that of the year 1910, this decrease being largely due to lowering of the average rate of premium and to excess losses.

FIRE AND MARINE INSURANCE COMPANIES

(*Insurance Year Book*)

YEAR	No. of companies and Lloyds	Capital (thousands)	Total assets exclusive of premium notes (thousands)	Net surplus (thousands)	Net premiums (thousands)	Total income (thousands)	Paid for losses (thousands)	Paid for dividends (thousands)	Paid for expenses (thousands)	Total disbursements (thousands)
1911....	621	97,703	754,344	283,201	358,623	392,966	184,917	33,291	129,474	347,683
1910....	628	94,918	713,138	263,867	352,436	385,657	168,433	35,905	124,878	329,218
1909....	636	87,638	668,194	243,414	333,862	365,264	156,369	31,217	116,964	304,552
1908....	636	84,704	611,752	211,989	313,329	339,068	167,354	28,655	111,314	307,223
1907....	654	88,560	566,847	175,816	317,013	342,531	147,213	26,051	108,800	282,065

Fire Losses.—The extent to which heavy fire losses affected the underwriting income of the companies may be judged from the accompanying table of fire losses compiled by the *Journal of Commerce and Commercial Bulletin*. During the calendar years 1910 and 1911 the fire losses of the United States and Canada were excessive when compared with 1909, amounting in each year to slightly over \$234,000,000, or, roughly speaking, a per capita loss of between \$2.00 and \$2.50, as compared with an estimated per capita loss in Europe of less than 40 cents.

For the first nine months of 1912 the fire losses aggregated \$177,529,950, or only about \$1,500,000 less than the heavy losses during the corresponding period of 1911, but over \$18,000,000 in excess of the loss during 1910, which is reported at

\$159,347,300. In January the losses totaled \$35,653,450, and in February \$28,601,650, this being the largest amount ever charged against the month of February, with the exception of 1904, the year of the Baltimore conflagration. These heavy losses are traceable largely to the Houston fire and the destruction of the Equitable Life Building. In commenting on these heavy losses, the *Journal of Commerce* states:

The enormous increase in January and February over the losses of the same months in past years indicate very strongly that 1912 will be a bad year for fire underwriters and that comparatively few will make any real underwriting profit. That quite a number of fire-insurance companies will be forced out of business this year, if the present abnormal loss ratio continues, seems to be a foregone conclusion.

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FIRE LOSSES

	1908	1909	1910	1911	1912
January.....	\$29,582,000	\$22,735,000	\$15,175,400	\$21,922,450	\$35,653,150
February.....	18,489,700	16,131,000	15,489,350	16,415,000	28,601,650
March.....	16,723,300	13,795,400	18,465,550	31,569,800	16,650,850
April.....	26,000,000	19,345,300	18,091,800	17,670,550	16,349,400
May.....	15,181,150	17,360,400	18,823,200	21,422,000	21,013,950
June.....	19,512,000	14,435,950	13,183,600	20,691,950	16,103,450
July.....	15,323,750	15,830,900	26,847,900	25,301,150	15,219,100
August.....	23,123,000	16,423,000	21,570,550	12,662,650	14,158,800
September.....	21,431,400	15,043,000	11,700,000	11,333,250	13,779,300
October.....	22,722,850	17,765,200	37,188,300	13,945,000	13,661,650
November.....	15,834,350	14,808,550	16,407,000	18,680,600	16,172,300
December.....	14,629,750	19,975,500	21,528,000	22,722,850	.....

COMBINED RISKS OF AMERICAN AND FOREIGN COMPANIES (Insurance Year Book)

YEAR	Amount covered	Premiums charged	Rate per \$100
1901.....	\$23,165,057,376	\$239,588,817	\$1.0342
1902.....	24,318,694,589	267,176,484	1.0986
1903.....	25,973,182,459	292,346,846	1.1255
1904.....	27,799,253,420	314,812,135	1.1324
1905.....	30,096,204,349	342,215,356	1.1371
1906.....	32,278,524,682	365,135,773	1.1312
1907.....	35,375,319,820	402,874,727	1.1389
1908.....	37,155,734,649	417,671,225	1.1241
1909.....	39,951,263,796	442,415,111	1.1074
1910.....	43,123,801,572	464,616,777	1.0774
1911.....	46,276,992,650	491,072,424	1.0612

State Control of Fire Rating.—In the 1911 issue of the *AMERICAN YEAR BOOK* (p. 322) considerable space was devoted to a discussion of the various acts passed during 1911 with a view to having the state control fire rating. Attention was also called to a number of court decisions, especially the decision of Judge John C. Pollock, of the United States District Court at Topeka, declaring constitutional the Kansas rating law of 1909. At the present time, state rating laws exist in Kentucky, Missouri, Kansas, Texas, and Louisiana, while in New York the insurance department has the right to review fire-insurance rates and order discriminations removed. It is reported that a law similar to the New York rating law will be introduced in the Illinois legislature at an early session.

The most noteworthy event in 1912, along the line of controlling rates by statute, is the passage of the Kentucky law. According to this law a state insurance board, composed of the insurance commissioner and two citizens, appointed by the auditor of public accounts, is created. All licensed companies in Kentucky doing a fire-insurance busi-

ness must, within 30 days, file with this board copies of every general basis schedule applied in Kentucky, showing all charges and credits, terms, privileges, riders, and conditions which in any way affect rates; and also copies of every book of rates and all specific rates which are not included in rate books or rate cards. The board is authorized to consider the reasonableness of such schedules and rates, and is empowered to make such alterations as will enable the board to publish reasonable schedules and charges. The board is also empowered to alter or recall general schedules. It may prescribe rules for keeping proper records by all companies, bureaus and boards, and any insurance companies, person, city, or town dissatisfied with a rate may apply in writing to the board for a modification of the same, and in case of the refusal of the board to act, an appeal may be taken to the circuit court of Kentucky.

As soon as this law was passed, the insurance companies contested its validity, and sought to enjoin the board from the exercise of the functions conferred upon it by the statute. In June, however, the

United States District Court of Kentucky refused to grant such an injunction, and in its decision reached the following conclusions:

1. Fire insurance is a commercial necessity, and its character tends to monopoly. To engage in the business calls for a large capital. Practically it is in the hands of a comparatively small number of insurers, who, naturally, in many things, act together or in groups, and who are so situated as to make competition in rates subject to easy control. Actual combinations to restrain competition in rates have been common enough to provoke legislation in many states, including Kentucky.

2. The business of fire insurance is not impressed with a public use in the sense that the public can demand service, but it has at least a quasi-public, as distinguished from a purely private, character.

3. Recognizing such public character, the business has been subjected to regulations which would be quite invalid in a purely private business, such regulations, for example, as a valued policy law limiting the amount of business a company may do in a year, the amount of commission it may pay its agents, etc.

4. Complainant is a Missouri corporation. It is permitted to do business in Kentucky under a license annually renewed. It cannot have greater rights than a domestic corporation has in the subject matter now involved.

5. The commission has fixed no rules; whether it will reduce existing rates at all is surmise; and whether its regulation would in the end work pecuniary injury to complainant is still further uncertain.

6. The provision for classification of insurance companies does not offend against "equal protection."

Following this decision, according to press accounts, the companies are planning to take the case to the United States Supreme Court with a view to having it combined with the Kansas case (this case was discussed in the 1911 *Insurance Year Book*), and thus secure a decision on both. It is to be noted, however, that the Supreme Court in recent decisions, some of which were noted in the *AMERICAN YEAR BOOK* for 1911 (p. 323), shows a tendency to recognize larger rights on the part of the states to regulate insurance companies.

During the year 1912 also a bill

was introduced in the state of Virginia, which has for its object the regulation of fire-insurance rates, and which is more sweeping in character than any bill thus far submitted to any state legislature. It provided that upon the application of the municipal council of any city or town or the board of supervisors of any county in the state, the commission created by the act must proceed to make what the members conceive to be "just and equitable rates for that locality." The bill also contained a stringent anti-compact section, a provision for a standard policy, and further provisions relating to the reporting by companies in the annual statements of the exact net profits and losses on each class of risk. The commission was also directed to prescribe maximum and minimum commissions to be paid to agents, and any company violating this regulation is declared to be guilty of a misdemeanor. Largely owing to the influence exerted by the insurance commissioner of the state, this act, although it passed the House, failed to become a law, because of failure to pass the Senate. It is also worthy of note that, as regards the Texas rating law, the Democratic party of the state incorporated a plank in its platform for the repeal of the law, which plank received the indorsement of the Democratic candidate for the governorship. Judging from the insurance press, the Texas rating law will, in all probability, be repealed.

Other Important Events in Fire Insurance.—Among the other important events in fire insurance during 1912 the following should be noted:

(1) The action of the insurance commissioners in their convention at Spokane, in passing a resolution to the effect "that a special committee of five be appointed by the president to ascertain the feasibility of having fire-insurance companies adopt a uniform system of classifying their experience, and making periodical reports to some central organization, and adopt a working plan to be effective Jan. 1, 1913." This resolution was offered on behalf of the superintendent of insurance of New York, who contended that the loss

experience of the companies in each class is the only true basis for schedule basic rates, and that, therefore, the companies and rating organizations should adopt some system for the uniform classification of data either by districts or states. In this way only, he contends, can like rates for like hazards be justly arrived at.

(2) The recommendation by a special committee of the National Board of Fire Underwriters to organize a bureau of publicity for the purpose of educating the public to understand fire underwriting, and to oppose undesirable legislation. The bureau, it is proposed, should work in conjunction with such important bodies as the Western Union, the Eastern Union, New York Board of Fire Underwriters, the South Eastern Underwriters' Association, and the Board of Fire Underwriters of the Pacific. The purposes of the plan are set forth as follows:

First: To consider important measures that may be introduced in legislative bodies, with a view to ascertaining and publicly presenting the reasons which may exist for their adoption or rejection by the legislature; and,

Second: To consider important measures that may be suitably a matter of general concern to stock fire-insurance companies, as, for example, rulings of insurance commissioners, or a state attorney-general's interpretation of laws applying to stock fire-insurance companies, municipal licenses and other unforeseen conditions which might arise.

(3) The decision of the Supreme Court of Virginia, reversing the lower court at Newport News, which had fined the Virginia committee of the Southeastern Underwriters' Association for conspiracy to raise fire-insurance rates in Newport News. Mr. Justice Buchanan says, among other things, in the opinion that the companies were justified in raising their rates in the city and had the same right to take into consideration the license taxes which the city required them to pay as any other item of expense attending their business. To quote the opinion:

If it be lawful for laborers to control the terms of their hiring and to induce others to unite with them for purpose, it would seem to follow,

in the absence of any statutory regulation upon the subject, that it is not unlawful for individuals or corporations engaged in the insurance business to agree upon the terms and conditions and rates upon which they are willing to insure, and to induce others engaged in the same business to unite with them in maintaining the terms and conditions and rates so fixed and agreed upon, provided they use no unlawful means in accomplishing their objects.

Marine Insurance.—The loss of the steamship *Titanic*, following so closely as the third of a series of heavy marine disasters, caused a situation in the marine underwriting business, which, according to the insurance press, has never been approached in the history of marine underwriting. The wrecking of the *Delhi* and *Oceana* involved insurance on specie alone of about \$4,000,000. In the *Titanic* disaster, the liability of underwriters involved in risks on persons and property was estimated to approximate \$15,000,000. It is stated that there was a total insurance of \$5,000,000 on the hull of the *Titanic*, of which \$1,057,000 was placed in Lloyds and divided up among 600 underwriters, the remainder being placed in companies writing marine lines in the United States, England, and the Continent. According to cable advices from London, the total insurance effected on the cargo and hull approximated £2,350,000, and a certain percentage of the risk was carried by the White Star Co. in its own fund.

The effects of this disaster, it is generally believed, will be far-reaching. Not only have the government investigations of the disaster tended toward the enactment of legislation providing for greater safety to life and property on the sea (see I, *The Titanic Disaster*), but there is also noticeable a tendency to place less reliance by large navigation companies on the practice of self-insurance. Thus, shortly after the disaster, announcement was made by the Hamburg-American Steamship Co. that it had abandoned its scheme of carrying its own insurance, and that hereafter it would have its vessels insured to their full value against total or partial loss. According to the insurance press, this action was

taken in consequence of the sinking of the *Titanic*, which disaster showed that there are few, if any, corporations whose property is so extensive and so widely distributed in regard to the average value per unit of property, as to secure for the corporation the beneficial operation of the law of average. It is also the general impression that this disaster, in conjunction with the other heavy losses already referred to, will lead to a considerable increase in rates. It is stated in the press that Chubb and Son, widely known marine underwriters, last April predicted a considerable increase in ocean marine tariffs. According to the statement, there was also an average increase of 10 per cent. last year in the rates on hulls engaged in the coastwise traffic, and that the present rate on bullion is 1-20 of one per cent.

In connection with marine insurance, two other occurrences in 1912 are worthy of note, namely:

(1) The sanctioning of new cargo clauses by marine underwriters, with a view to establishing greater uniformity. According to the *London Economist* of July 27, "the main body of Lloyd's policy has always been uniform, but the clauses inserted by brokers vary enormously, and it is just as well that they should be made uniform with the rest of the policy."

(2) The attitude of the New York Insurance Department toward Lloyds of London. Owing to the opposition of the managers of the foreign insurance companies doing business in the United States, Superintendent W. T. Emmet refused to approve the proposition of a certain brokerage firm to change the name of the "New York Fire and Marine Underwriters" to "London Lloyds Fire and Marine Underwriters." He took the position that this new name would give the impression that London Lloyds had been regularly admitted to write insurance in New York as a regular corporation. Moreover, the New York Insurance Department has begun an investigation into the amount of business placed in the United States by Lloyds brokers with a view to rec-

ommending legislation for the protection of holders of Lloyds, London, policies in this country. According to the insurance press, the Insurance Department proposes to take up the question of Lloyds operations in this country directly with the underwriters in London, with a view to securing the coöperation of the reputable underwriters in an endeavor to eliminate the operations of irresponsible parties.

Liability Insurance.—The remarkable growth of this form of insurance, due mainly to the enactment of more drastic employer's liability laws, is indicated by the fact that, whereas in 1910 32 companies are referred to in the *Insurance Year Book* as writing this form of insurance in the United States, this number increased to 45 by the close of 1911. These 45 companies received premiums during the year of \$35,002,490, as compared with \$28,652,624 for the 32 companies in 1910, and paid losses of \$16,548,724, as compared with \$20,490,116 in 1910. Five years ago (1907) only 23 companies are mentioned as writing liability risks in this country. They collected only \$22,759,060 in premiums, and paid only \$10,999,586 in losses. It is to be noted, however, that the ratio of losses to premiums is given as 57.7 per cent., as compared with 57.7 per cent. in 1910 and 42.6 per cent. in 1909. The ratio for 1911 and 1910 is regarded as excessive, and for the causes the statement of the Travelers' Insurance Company may be referred to. This company states that:

Liability insurance experienced in 1911 a year of difficult problems. The obligations of companies writing that class of insurance were increased by advanced legislation and by the increasing liberality of the courts in construing the law respecting the liability of employers to their injured workmen. It was impossible to advance premiums with equal rapidity, and the probable consequence is that every insurance company in America writing liability insurance will suffer a loss upon the business of 1911.

The most important changes in this form of insurance during 1911 are the following (see also XVII, *Labor Legislation*):

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(1) The enactment of a new liability-loss reserve law in New York, Massachusetts, Connecticut, Ohio, Minnesota, Washington, Georgia and Pennsylvania. In the words of Edwin W. De Leon, president of the Casualty Company of America:

The new act provides briefly that companies that have transacted business for ten years or more shall maintain a liability loss reserve computed upon their actual experience of premiums earned on policies issued each year of the five years immediately preceding the date of statement, with a minimum of 50 per cent., plus the sum of \$1,000 for each suit pending on account of accidents reported under policies issued previous to said ten years, and the sum of \$750 for each suit pending on account of accidents reported under policies issued during the first five years of the ten-year period. From the amount thus ascertained the company may deduct the losses and loss expenses paid under the policies issued each year of said five-year period, and the balance remaining shall be set aside as the loss reserve, to which shall be added the amount for pending suits, as heretofore given. Companies that have transacted liability insurance for less than ten years shall compute the reserve substantially in accordance with the foregoing, except that such companies shall maintain as the legal reserve 50 per cent. of the earned premiums for the year ending Dec. 31, 1911; 51 per cent. at Dec. 31, 1912; 52 per cent. at Dec. 31, 1913; 53 per cent. at Dec. 31, 1914; 54 per cent. at Dec. 31, 1915; 55 per cent. at Dec. 31, 1916, and for each year thereafter until the expiration of the ten-year period, when the reserve shall be computed upon the actual experience of the company. (*Insurance Year Book, 1912.*)

According to Mr. De Leon, the new law will make it impossible for a new company to write a large volume of business at the start without having a substantial surplus, and will also act as a check upon old companies which may be eager to excel all competitors to the detriment of their own interests.

(2) The transmission by the President of the United States to Congress, on Feb. 20, 1912, of the report of the Employers' Liability and Workmen's Compensation Commission, authorized by joint resolution approved June 25, 1910, to make a investigation of the sub-

ject. The proposed Congressional enactment eliminates the doctrines of negligence, assumption of risk, fellow servants' fault, and contributory fault. The bill excludes the first 14 days from compensation, except as regards medical aid. Compensation for personal injury is made on the basis of 50 per cent. of the monthly wages for life for permanent total disability, and also 50 per cent. during temporary total disability. As death benefits, monthly payments are to be made for eight years as follows: to a widow alone, 40 per cent. of monthly wages; to a widow and child under 16 years, 50 per cent.; to a child under 16 years or dependent, 25 per cent., and 10 per cent. additional for each child. According to the *United States Review*:

The combined railroad companies of the country are paying out to their employes for accidents in settlements and judgments approximately \$10,085,000, and the proposed law, as nearly as the commission can estimate it, will raise this by 25 per cent. Figuring on the periodical payments extending over a term of years and capitalized at 5 per cent., the commission points out that the total received by the beneficiaries would reach an aggregate of \$15,000,000 annually.

(3) In the *AMERICAN YEAR BOOK* for 1911 (p. 326) it was explained that the leading liability companies organized the so-called Workmen's Compensation Service and Information Bureau, and its purposes were outlined. During 1912 a number of companies withdrew from the organization, and a considerable amount of opposition to the Bureau existed. By April, 1912, however, the insurance press announced that a better understanding existed between the companies who were members, and the new rules adopted by the Bureau, which went into effect April 4, governing departures from rates on special risks, give much more latitude to the members in meeting outside competition, by providing that the company that has carried the risk for ten months may file a reduced rate with the bureau if it feels that this action is necessary. Dur

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

ing the year the Bureau, now representing 18 companies, doing over three-fourths of the total liability insurance in the country, compiled the rates for various states where new compensation and liability laws were enacted or changed. These rates are recommended as minimum

charges, and the "Manuals" containing the same are sold to any person, whether a member or not.

Accident and Sickness Insurance.—As regards accident insurance and health insurance, the volume of business is shown in the following table:

ACCIDENT AND HEALTH INSURANCE

YEAR	ACCIDENT INSURANCE			HEALTH INSURANCE		
	Premiums	Losses	Ratio of losses to premiums	Premiums	Losses	Ratio of losses to premiums
1911.....	\$27,351,626	\$11,837,347	43.2	\$7,101,666	\$3,314,301	46.6
1910.....	23,894,665	10,068,926	42.1	6,451,028	2,770,744	42.9
1909.....	21,446,506	8,248,182	38.4	5,714,579	2,173,386	38.0
1908.....	19,044,634	8,104,933	42.5	4,592,365	1,859,276	40.5
1907.....	18,865,102	8,101,101	42.9	3,872,936	1,579,534	40.8

Stock companies to the number of 139 were writing this form of insurance in the United States at the close of 1911, and, according to the above figures, compiled in the 1912 *Insurance Year Book*, the increase in premiums was fairly large, but the ratio of losses to income shows a considerable increase, especially in the case of sickness insurance. In fact, as pointed out by Mr. De Leon, this increase in ratio was "more pronounced in 1911 than in any previous year, and many of the companies suffered heavier losses than at any period of their history." Greater liberality in policy provisions, especially the addition of the 50 per cent. accumulation of the face of the policy at its inception, is assigned as the chief reason.

During the year 1912 the International Association of Accident Underwriters merged with the Board of Casualty and Surety Underwriters, and this is the most important event of the year in this form of insurance. The new organization is called the International Association of Cas-

ualty and Surety Underwriters, consisting of seven sections, each representing some leading form of casualty insurance. The year witnessed the enactment of the standard policy, explained in the *AMERICAN YEAR BOOK* for 1911 (p. 324), by additional states, thus bringing about greater uniformity and definiteness of meaning.

Fidelity and Surety Insurance.—Of the many other forms of casualty insurance, fidelity and surety insurance is by far the most important, and, according to the following table, showed an increase in premium income of \$1,484,994 in 1911. Losses, however, increased \$2,175,531, and the ratio of losses to premium income was high, namely 29.3, as compared with only 18.1 in 1910 and 24.0 in 1909. Compared with previous years, however, these ratios are low, and the improvement is attributed in large measure to the Towner Rating Bureau, the organization of which was explained in some detail in the *AMERICAN YEAR BOOK* for 1911 (p. 326).

FIDELITY AND SURETY INSURANCE

YEAR	Premiums	Losses	Ratio of losses to premiums
1911.....	\$16,958,051	\$4,980,430	29.3
1910.....	15,473,057	2,814,899	18.1
1909.....	13,283,693	3,200,645	24.0
1908.....	12,530,922	3,826,427	30.5
1907.....	11,129,940	4,319,406	38.8

XV. PROBLEMS OF POPULATION

W. F. WILCOX

THE THIRTEENTH CENSUS

Classification According to Sex.—Since the YEAR BOOK for 1911 was issued figures from the thirteenth census have been published, showing further classifications of the population. Confining attention to the United States lying between Canada and Mexico, i. e., excluding Alaska, the Canal Zone and the insular possessions, the males constituted 5,146 per 10,000 of the total population in 1910, while in 1900 they were only 5,107 per 10,000. The proportion of males has increased and is larger now than at any time since 1820, when the records began. The excess of about 2,700,000 males in the total population is usually explained as due to immigration. There are indeed about 1,700,000 more immigrant males than immigrant females in the country. But as the total excess of males is about 2,700,000, immigration seems to account for less than two-thirds of it. Still it may do more than that. There is some evidence to show that a certain number of foreign-born residents are reported at the census as natives and that this occurs more commonly among males than females, partly because there are more of the former class and partly also because the proportion of males personally interviewed by the enumerators is probably smaller. If this is a factor, an unknown part of the excess of one million males in the native population finds here its explanation.

The increase in the proportion of males between 1900 and 1910 is entirely due to the enormous immigration of that period and to the high proportion of males among recent immigrants, for the proportion of males

among the native population was practically unchanged.

A preliminary statement, issued June 9, gave the total number of males of voting age as 26,999,151.

Speaking generally, the states with an excess of females are those along the Atlantic Coast. Of such there were 10 in 1900 and 6 in 1910. In all states east of the Mississippi, except Kentucky and Tennessee, the proportion of males increased in the last ten years, but in 12 of the 23 states west of the Mississippi the proportion of males decreased. Among the 50 cities of the United States having at least 100,000 inhabitants in 1910 there were 33 in 1900 which had an excess of females; by 1910 this number had shrunk to 22. In these 50 cities as a whole the male population in 1910 was about 10,240,000 and the female population about 10,064,000, showing that in our large cities at the present time males are 50.4 per cent. of the population and that the sexes are approximately equal in numbers. Almost the entire excess of males in the United States will be found in the rural districts. This separation of the sexes, by which the cities as a whole contain about equal numbers of the two sexes and the rural districts as a whole a marked excess of males is apparently on the whole increasing, but during the last decade this change has been masked, if not entirely checked, by the great immigration of males and their slow dispersion into the smaller cities and the rural districts.

Classification According to Race.—The decreasing proportion of Negroes in the population of the United

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States (11.6 per cent. in 1900 and 10.9 per cent. in 1910) was mentioned in the last YEAR BOOK. The change in the southern states alone from a proportion of 32.3 per cent. Negro in 1900 to 29.8 per cent. in 1910 is more significant. This de-

crease in the proportion of Negroes in the southern states was greater than at any previous decade of our national history. The following table of the percentage of Negro population in the different states will show how widespread was that decrease:

STATE	PER CENT. OF NEGROES IN TOTAL POPULATION		Increase	Decrease
	1900	1910		
Delaware.....	16.6	15.4	.....	1.2
Maryland.....	19.8	17.9	.....	1.9
District of Columbia.....	31.1	28.5	.....	2.6
Virginia.....	35.7	32.6	.....	3.1
West Virginia.....	4.5	5.3	.8	.....
North Carolina.....	33.0	31.6	.....	1.4
South Carolina.....	58.4	55.2	.....	3.2
Georgia.....	46.7	45.1	.....	1.6
Florida.....	43.6	41.0	.....	2.6
Kentucky.....	13.3	11.4	.....	1.9
Tennessee.....	28.8	21.7	.....	2.1
Alabama.....	45.2	42.5	.....	2.7
Mississippi.....	58.5	56.2	.....	2.3
Arkansas.....	28.0	28.1	.1	.....
Louisiana.....	47.1	43.1	.....	4.0
Oklahoma.....	7.0	8.3	1.3	.....
Texas.....	20.4	17.7	.....	2.7

In each southern state, except West Virginia, Arkansas and Oklahoma, the proportion of Negroes in the total population diminished. Outside of the south no such general rule prevailed.

With the growing diversification of southern agriculture and industry and the advantages possessed by white labor in many of the newer branches, this tendency to a slower increase among southern Negroes both absolutely and in comparison with the whites seems likely to continue. In that case there are likely to be not far from 20,000,000 Negroes in the United States a century hence and they will constitute not far from one-sixth instead of as now about three-tenths, of the population in the southern states.

The question is often asked whether Negroes are more numerous in cities or in rural districts. In the north-

ern states they are mainly an immigrant class and like other immigrants have gone prevailing to the cities. But in the southern states the problem is not so easily answered. A study of the figures for the several southern states shows, however, that in what may be called the border states and Texas the proportion of Negroes is greater in the cities than it is in the country districts, but in the states of the lower south, except Texas, the proportion of Negroes is greater in the rural districts. This fact appears from the following figures, in which Group I includes Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Kentucky, Tennessee, Arkansas, Oklahoma and Texas, and Group II includes the states of the lower south, except Texas, viz., South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana:

	POPULATION		Per Cent. Negro
	Total	Negro	
States in Group I:			
Cities of 25,000+.....	2,675,991	603,698	22.6
Rest of area.....	16,244,604	3,192,587	19.7
States in Group II:			
Cities of 25,000+.....	1,071,673	400,036	37.3
Rest of area.....	9,397,062	4,553,106	48.5

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In the border states the Negro is rather more of a dweller in cities than of a farm laborer; in the states of the lower south he is much more of a farm laborer than of a city dweller.

Mulattoes.—In 1910 the Negro population was classified as full-blood and mixed-blood, or mulattoes. Similar inquiries were made at the censuses of 1850, 1860, 1870 and 1890. The general result of these inquiries for the country as a whole has been as follows:

DATE	Percentage of Mulattoes in Total Negro Population of Continental United States
1850.....	11.2
1860.....	13.2
1870.....	12.0
1890.....	15.2
1910.....	20.9

These figures suggest a steady increase in the infusion or diffusion of white blood among the Negroes of the United States. Returns gathered before and just after the Civil War agree reasonably well, but since that time the change has been marked. This might be due to the intermarriage of mulattoes with Negroes and not be evidence of a recent increase in the fertile unions between whites and Negroes or mulattoes. Even with this interpretation the figures for the country as a whole would tell against the common opinion that mulattoes are less virile and long-lived than full-blooded Negroes.

Probably a factor of importance in the apparent increase of mulattoes was the employment of many Negro enumerators at the census of 1910 for enumerating members of their own race. These Negro enumerators seem to have reported a proportion of mulattoes in their districts greater than that found by white enumerators in adjacent districts.

The divisions of the United States may be classed into two groups, those showing little or no increase in the proportion of mulattoes since 1890 (Group I), and those showing a marked increase (Group II). The distinction is clearly brought out in the following grouping:

DIVISIONS	PROPORTION MULATTO IN TOTAL NEGRO POPULATION	
	1890	1910
GROUP I:		
New England.....	32.7	33.4
Middle Atlantic....	21.4	19.6
East North Central.	37.2	33.2
West North Central.	25.3	28.7
Mountain.....	35.7	28.6
Pacific.....	42.3	34.7
GROUP II:		
South Atlantic.....	13.4	20.8
East South Central.	13.6	19.1
West South Central.	14.5	20.1

The increase of mulattoes, whether apparent or real, is practically confined to the southern states, but is there very marked. At the present time the differences between north and south in the proportion of mulattoes to all Negroes are comparatively slight.

Classification According to Nationality.—The increase in the total population of the United States between 1900 and 1910 was nearly 16,000,000. Of this 14,900,000, or 93.1 per cent. was an increase of whites and 990,000, or 6.2 per cent., an increase of Negroes. The Indians apparently increased by 28,500 and the Mongolians by approximately the same amount, this being the balance of a decrease of 19,000 in the Chinese and an increase of 47,400 in the Japanese. Of the increase among the whites, more than 3,000,000, or a little over one-fifth (21 per cent.) was due to the increase in the foreign-born. This was a much greater increase of the foreign-born than in any previous decade. The nearest approach to it was in the decade between 1880 and 1890, when it was 2,570,000, or five-sixths of the increase in the last decade.

The total increase in the native white of foreign parents was slightly greater than that of foreign white. Of the increase in the white population rather less than three-fifths (57 per cent.) was an increase of native whites of native parents.

A census press bulletin gives the distribution of the population in each of the 19 cities of the United States having at least 250,000 inhabitants by the four elements of native white, native parents; native whites, foreign or mixed parents; foreign-born white-

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and Negro. The cities with the largest proportion of foreign-born whites in their population were: New York (40.4), Boston (35.9), Chicago (35.7), Cleveland (34.9), Detroit (33.6), Newark (31.8), and San Francisco (31.4). The cities with the smallest proportion of foreign-born white are: Washington (7.4), New Orleans (8.2), Baltimore (13.8), Cincinnati (15.6), St. Louis (18.3). Those with the largest proportion of native whites of foreign-born or mixed parentage are: Milwaukee (48.8), Buffalo (43.3), Chicago (41.8), Jersey City (40.7), and Detroit (40.4). Those with the smallest proportion of native white of foreign-born or mixed parentage are: Washington (13.6), New Orleans (21.9), Los Angeles (23.4), Baltimore (24.1). The cities with the largest proportion of native whites of native parents in their population are: Los Angeles (53.2), Washington (50.4), Baltimore (46.8), New Orleans (43.5), Cincinnati (42.6). Those with the smallest proportion of native whites of native parents are: New York (19.3), Chicago (20.4), Milwaukee (21.1), Boston (23.5), Cleveland (23.6), and Detroit (24.7).

The nationalities which have increased most rapidly during the last ten years are as follows:

COUNTRY OF BIRTH	Percentage of Increase
Italy.....	177
Russia and Finland.....	166
Austria-Hungary.....	160
Mexico.....	115

Those which have increased slowly or absolutely decreased include:

COUNTRY OF BIRTH	PERCENTAGE OF	
	Increase	Decrease
Norway, Sweden and Denmark.....	17.7	.....
Great Britain.....	4.7	.....
Canada and Newfoundland.....	2.2	.....
Germany.....	.....	11.2
Ireland.....	.....	16.3

The decrease in Germans and Irish does not mean, of course, that there has been no immigration from those

countries since 1900, but merely that the number of arrivals has not equaled the number of persons of German or Irish birth living in this country in 1900 who died or emigrated during the following decade.

The states which have been receiving recent immigrants in larger proportions than formerly are indicated by a computation showing the percentage of the foreign-born in each state who arrived in the United States subsequent to Jan. 1, 1901. The states in which more than two-fifths of the foreign-born belong to this class of recent immigrants are as follows:

STATE	Percentage of Resident Foreign-Born Arriving in the United States Since 1900
West Virginia.....	68.2
Arizona.....	54.9
Wyoming.....	51.7
New Mexico.....	49.2
Pennsylvania.....	48.0
Florida.....	44.1
New York.....	43.5
New Jersey.....	42.4
Montana.....	42.1
Nevada.....	41.8
Connecticut.....	41.5
Ohio.....	40.4

On the other hand those states which have appealed but little to recent immigrants and in which accordingly less than one-fourth of the foreign-born population arrived in the last ten years are as follows:

STATE	Percentage of Resident Foreign-Born Arriving in the United States Since 1900
Kansas.....	24.9
Arkansas.....	24.3
South Dakota.....	23.5
Nebraska.....	21.6
Wisconsin.....	21.3
Iowa.....	18.7
Kentucky.....	15.7

Aliens.—Another result of the rapid immigration in recent years appears in the great increase of aliens. Of these there were less than 1,000,000 in 1900 and 2,250,000 in 1910. The foreign-born white males at least 21 years of age increased by 35 per cent., those who had been naturalized increased by only 6 per cent., and the

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aliens increased by 149 per cent. Stated in another way, we may say that of the foreign-born white males at least 21 years of age in the United States in 1900 about one-sixth, 18.7 per cent., were alien, but in 1910 about one-third, 34.1 per cent., were alien.

A comparison of the census figures with those of the Bureau of Immigration shows that between Jan. 1, 1901, and April 1, 1910, the latter authority recorded the arrival of 8,250,000 immigrants, of whom only 5,000,000, or 61 per cent., were found by the Census Bureau present in this country at the census of 1910. The census of June 1, 1900, found 2,600,000, or 76 per cent., of the 3,400,000 immigrants reported by the Bureau of Immigration as having arrived during the preceding ten years. The fact that the proportion of the immigrants in the decade who were found by the Census Bureau in the country at the close of the period was 15 per cent. higher in 1900 than in 1910 shows and roughly measures the increasing migration of "birds of passage" and the larger proportion of the return current.

Illiteracy and School Attendance.—Comparable records for illiteracy in the United States begin with the census of 1880. The following table shows the changes during the 30-year period:

DATE OF CENSUS	Per Cent. of Population at Least 10 Years of Age Who Were Unable to Write
1880.....	17.0
1890.....	13.3
1900.....	10.7
1910.....	7.7

The percentage of illiteracy in 1910 was thus less than one-half as great as it was 30 years before. The decline is all the more important when the great amount of illiteracy among recent immigrants is considered. For example, in the year ending June 30, 1910, among the 921,061 immigrants 14 years of age and over, 258,140, or 28 per cent., were unable to write. In view of these facts the steady and rapid decline in the percentage of illiteracy in the

total population is a striking evidence of the energy and efficiency with which American school systems are spreading the elements of education throughout all classes of the population.

The success of the American school system is more accurately measured by the decrease in illiteracy among the children 10 to 14 years of age. These are persons upon whom the school system has recently had an influence and illiteracy among them is little affected by immigration. Figures regarding this class also go back to 1880. The following table shows the result:

DATE OF CENSUS	Per Cent. Unable to Write Among Children 10-14 Years of Age
1880.....	19.8
1890.....	10.4
1900.....	7.2
1910.....	4.1

Thus child illiteracy is little more than one-fifth as great now in the United States as it was 30 years ago.

The decrease of illiteracy in the last ten years has been almost as great in amount as in the preceding decade (3.1 compared with 3.2 per cent.) and relatively much greater. Thus the child illiteracy in 1900 was more than two-thirds of what it was in 1890, but child illiteracy in 1910 was only 57 per cent. of what it was in 1900.

Naturally the decrease of child illiteracy has been greatest in amount in the southern states, but in none of the five southern and western groups was child illiteracy in 1910 less than half as great as it was in 1900. On the other hand, in each of the four northern divisions east of the Rocky Mountains child illiteracy was reduced in 1910 to less than one-half of what it was in 1900.

In the country as a whole and in most divisions the illiteracy of the native white children born of native white parents was not more than half as great in 1910 as it was in 1900. This statement holds of the four northern and two western divisions and also of the southern states west of the Mississippi River. The smallest proportion of child illiterates is found

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CENSUS OF POPULATION, 1890-1910

	1890		1900		1910	
	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total.....	62,947,714	100.0	75,994,575	100.0	91,972,266	100.0
Increase.....		24.9		20.7		21.0
By Sex:						
Male.....	32,237,101	51.2	38,816,448	51.10	47,332,122	51.14
Female.....	30,710,613	48.8	37,178,127	48.90	44,640,144	48.86
By Race:						
White.....	55,101,258	87.5	66,809,196	87.9	81,732,687	88.9
Negro.....	7,488,676	11.9	8,833,994	11.6	9,828,294	10.7
Indian.....	248,253	0.4	237,196	0.3	265,683	0.3
Mongolian.....	109,527	0.2	114,189	0.2	142,666	0.4
By Distribution:						
Urban.....	22,720,223	36.1	30,797,185	40.5	42,623,383	46.3
Rural.....	40,227,491	63.9	45,197,390	59.5	49,348,883	52.7
By Parentage:						
Both native.....	42,271,655	67.2	49,965,636	65.8	*49,488,441	.....
Both foreign-born.....			20,919,887	27.5	*18,900,663	.....
One native and one foreign-born.....			5,109,052	6.7		.....
By Nativity:						
Native†.....	53,698,154	85.2	65,653,299	86.3	*68,389,104	.....
Foreign-born.....	9,249,547	14.8	\$10,460,085	13.7	*13,343,583	.....
Austria.....	123,271		275,907		1,190,200	.....
Bohemia.....	118,106		156,891			.....
Canada (English)†.....	678,442		784,741		1,198,000	.....
Canada (French)†.....	302,496		395,066			.....
China.....	106,688		81,534			.....
Denmark.....	132,543		153,805		181,500	.....
England.....	909,092		840,513		875,400	.....
France.....	113,174		104,197		117,100	.....
Germany.....	2,784,894		2,663,418		2,499,200	.....
Holland.....	81,828		104,931		120,000	.....
Hungary.....	62,435		145,714		468,500	.....
Ireland.....	1,871,509		1,615,459		1,351,400	.....
Italy.....	182,580		484,027		1,341,800	.....
Mexico.....	77,853		103,393		218,800	.....
Norway.....	322,665		336,388		403,500	.....
Poland.....	147,440		383,407			.....
Russia.....	182,644		423,726		1,577,300	.....
Scotland.....	242,231		233,524		263,400	.....
Sweden.....	478,041		572,014		665,500	.....
Switzerland.....	104,069		115,593		124,800	.....
Wales.....	100,079		93,586		82,600	.....
Other countries.....	127,467		273,442			.....

* White population only.

† Includes persons in the military and naval service of the U. S. (including civilian employees, etc.) stationed abroad, not credited to any state or territory.

‡ Includes Newfoundland.

§ In 1900 census, figures are exclusive of the foreign-born in the non-contiguous territory and in the military and naval service abroad.

among children born in this country of foreign or mixed parentage. Illiteracy among them is only one-third of what it is among the native whites of native parents and about one-sixth of what it is among child immigrants, a fact which is due largely to the location of the immigrants in northern cities where facilities for education are good and also to the eagerness with which immigrants use American school facilities for the benefit of their children.

Of the 27,750,000 persons of school age, that is, between six and 20 years, inclusive, 17,300,000, or 62.3 per cent., attended school during the year pre-

ceding the census day. This proportion naturally varied with age. Among those between six and nine years it was 73.5 per cent.; among those between ten and 14 it was 88.2 per cent.; among those between 15 and 17 it was 51.2 per cent., and among those between 18 and 20 it was only 15.2 per cent.

For comparison with the census of 1900 the ages 10-14, which are the ages of maximum school attendance, must be chosen. In 1900 79.8 per cent. of the children of that age attended school and in 1910 88.2 per cent., the improvement being most marked in the southern states. The

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following figures show the proportion of children ten to 14 years of age who were attending school in 1900 and in 1910 and the increase in that proportion during the period 1900 to 1910:

DIVISION	PER CENT. ATTENDING SCHOOL AMONG CHILDREN 10-14 YEARS OF AGE		Increase 1900-1910
	1910	1900	
New England.....	94.1	90.0	4.1
Pacific.....	94.1	91.8	2.3
East North Central.....	93.8	88.1	5.7
West North Central.....	93.6	88.3	5.3
Middle Atlantic.....	92.9	85.7	7.2
Mountain.....	90.2	85.2	5.0
West South Central.....	80.5	68.3	12.2
East South Central.....	79.0	65.8	13.2
South Atlantic.....	78.7	65.6	13.1

The ranking of the state groups has changed little in the last 10 years. The New England group has improved more rapidly than the Pacific states, so that the two now stand side by side at the head of the list. The East North Central has improved more rapidly than the West North Central, and displaced the latter from its position as third in the series. With these exceptions the order is unaltered. Much more noteworthy is the very rapid increase in the proportion of children in the southern states who were attending school. In each of the three southern divisions the proportion has increased by 12 per cent. or more. The change is still better indicated by the fact that in 1900 the lowest group, the South Atlantic states, differed from the highest group, the Pacific states, by 26.2 per cent., but in 1910 the difference between the extremes had diminished to only 15.4 per cent., or less than three-fifths of what it was in 1900.

The press bulletin figures for the individual states use the age period 6 to 14. Of children at these ages the largest proportion attending school was found in Vermont and Massachusetts, in each of which it was 92.9 per cent. The other states in which the proportion was 90 or over were: Connecticut (92.3), New Hampshire (91.2), Iowa (90.7), Michigan (90.7), Nebraska (90.2), New York (90.0). Those states with the smallest proportion of children 6 to 14 years of age reported as attending school were: Louisiana (54.6), Alabama (61.1), South Carolina (62.6), Georgia (65.6), Florida (66.0), Arizona (67.2), and Virginia (68.3). Naturally the extreme states differ from each other by an amount (38.3 per cent.) considerably greater than the divisions. The small proportion of children attending school in Louisiana and the high proportion in New England are clearly apparent. (See also XXXIV, *Education*.)

IMMIGRATION

Immigration in 1912.—The movement of aliens to the United States during the fiscal year ending June 30, 1912, was less than during the two years immediately preceding, and not materially greater than during the year 1908-9, when the influx was comparatively small, owing to the depressed condition of business. The total number of aliens admitted in 1911-12 was 1,017,155, compared with 1,030,300 in 1910-11, 1,198,037 in 1909-10, and 944,235 in

1908-9. Departures, however, were on a much larger scale than in any very recent year, and the addition to the foreign-born population of the United States in 1911-12 was materially less than in any year since 1903-4, excepting only 1907-8. The outward movement of aliens during the last fiscal year totaled 615,292, compared with 518,215 in 1910-11, 380,418 in 1909-10, and 400,392 in 1908-9. The net gain in foreign population, therefore, was 401,863 dur-

ing the last fiscal year, compared with 312,085 in 1910-11, 817,619 in 1909-10, 543,843 in 1908-9, and 209,867 in 1907-8.

As usual, the greatest number of aliens admitted came from Italy, but departures of Italians were on such a scale that the net addition to the Italian population was the smallest in all previous years since 1901-02, excepting only 1907-8. Up to the end of April, more Italians had left the country than had entered, and the net arrivals during the fiscal year were only 24,817, compared with 95,995 in 1910-11 and 167,492 in 1909-10. The movement from the United Kingdom, Holland, Greece and Scandinavia decreased during the fiscal year, but there was a decided increase in the arrivals of Poles and Austro-Hungarians. Departures, however, were heavy in practically all classes except Hebrews. The most striking of the increases is in the figures of arrivals from Mexico, which have risen from 715 in 1901-2 to 25,702 in 1911-12, with comparatively small returns.

Establishment of a Literacy Test.—Two bills were introduced in Congress during the year providing for the establishment of a literacy test for immigrants. The Dillingham bill, which passed the Senate April 19, proposed to exclude from admission to the United States all aliens over 16 years of age who cannot read and write, in their own language, a certain number of words of the Constitution of the United States, provided, however, that "any admissible alien, or any alien heretofore or hereafter legally admitted to this country, may bring in or send for his wife, his children under 18 years of age, and his parents or grandparents over 50 years of age, if they are otherwise admissible, whether they are so able to read and write or not."

This bill was tabled by the House Committee on Immigration and Naturalization on May 21. On June 4 the Committee voted to report the bill in an amended form by striking out everything except the enacting clause and substituting the Burnett bill reported to the House April 16. The Burnett bill is somewhat less stringent in its provision. It provides that within four months after its passage and approval the list of aliens now by law excluded from admission to the United States shall be broadened to include all aliens over 16 years of age, physically capable of reading, who cannot read a certain number of words in ordinary use in the English language, or the language or dialect of some other country, of the alien's choice, including Hebrew or Yiddish, provided that any admissible alien, or any alien heretofore or hereafter legally admitted, or any citizen of the United States, may bring in or send for his father or grandfather over 55 years of age, his wife, his grandmother, or his unmarried or widowed daughter, if otherwise admissible, whether such relative can read or not, and such relatives shall be permitted to land.

Three classes of persons would be exempt from the operation of the Burnett literacy test, namely, persons proving that they seek admission solely to escape from religious persecution, aliens in transit through the United States, and aliens who have been lawfully admitted to the United States and who later go in transit from one part of the United States to another through foreign contiguous territory.

This measure was reported to the House before Congress adjourned in August, but no action was taken until December. The bill was brought forward on Dec. 14, and passed the House on Dec. 18.

XVI. SOCIAL AND ECONOMIC PROGRESS

RECREATION

JOHN COLLIER

In the *AMERICAN YEAR BOOK* for 1911 (pp. 328-35) was given a general review of the recreation and leisure-time situation in America. Many developments there mentioned had barely been begun, at the time of the writing, and some are still in their beginning stage. In general, the year that has elapsed since the publication of the 1911 *YEAR BOOK* is rather devoid of striking events in the recreation field. This is due in part to the political preoccupation of the past year. The attention of social workers has been focussed on the task of writing into state and national laws and into party platforms those parts of the social reform programme that relate to economic conditions.

Below are briefly described the new events in the field of recreation which seem to the writer to be most significant.

Organization for Leisure-Time Enjoyment.—The Boy Scouts of America have continued their phenomenal growth. The American Boy Scout movement, which was at one time regarded as a competitor of the Boy Scouts of America, has now been largely absorbed into the Boy Scouts of America. Serious plans have been discussed looking to the creation of a Roman Catholic organization which would perform, for members of that church, the functions of the Boy Scouts movement. The Camp Fire Girls, organized early in 1912, corresponds in some measure, for women, to the Boy Scouts movement in the field of boys' activities. (See *The Boy Scouts and Camp Fire Girls*, *infra*.)

Among other forms of play organ-

ization, the corn clubs of the central western and southern states have grown in numbers during 1912. They are semi-educational, semi-recreational. In New York, under the People's Institute, there has been organized a three-fold league of school children, the Metropolitan Debating, Dramatic and Music League. The object of this league is the discovery and provision of attractive opportunities for the competitive and team-working spirit of school children in those spheres which lie outside of athletics. In the various cities the public-school athletic leagues, organized with similar objects in the athletic sphere, have continued to prosper.

Pageantry.—The largest pageant of the year was held at Philadelphia, this being the Philadelphia Historical Pageant of 1912. There were 5,000 actual participants. The necessary expense was met by subscription, but the sale of seats practically made the pageant self-supporting. This pageant marked a very great advance, artistically and socially, on the previous Philadelphia pageants, which are well known through the country.

The most advanced pageant, whether viewed sociologically or as a new art, was held at St. Johnsbury, Vt., in August. This pageant utilized actively eight hundred citizens in a town of eight thousand. It cost \$5,000, all of which money was raised locally, the sale of admissions fully meeting the expense. This pageant, like the previous Thetford pageant, was historical, civic and prophetic. As a democratic art enterprise, it challenged comparison with anything done in the old-world countries.

References: Book of the Pageant at Thetford, by W. C. Langdon, Sage Foundation, New York; *Book of the Pageant at St. Johnsbury*, by W. C. Langdon; *Festivals and Plays*, by Percival Chubb and associates; *Pageants and Pageantry*, by Orr & Bates (Ginn & Co., New York); *Dramatic Festivals*, by Anna T. Craig (Putnams, New York); *Folk Festivals*, by Mary Master Needham (Heubach, New York).

The Social Center and Wider Use of the School Plant.—In October, 1912, a long sought result was gained in New York City, when the Board of Education threw open eight public school buildings for political discussion. This work, viewed experimentally for the present year, will doubtless be greatly extended in subsequent political campaigns, and will influence the policy of many other cities and states. The state platforms of all political parties in various parts of the country contained an endorsement of the use of school buildings as political gathering places, primary polls, election polls, etc. The chairmen of the several national campaign committees likewise issued statements strongly endorsing the social-center idea. The movement for the civic and political use of school buildings may now be regarded as nation-wide and is sure to change the school policy of a hundred cities within the next two years.

The division of recreation of the Child Hygiene Department of the Sage Foundation (Sage Foundation, New York) continues its work of promotion for the wider use of school buildings.

At the annual convention of the Playground and Recreation Association of America, held in Cleveland in May, the social-center idea played a very large part. The various reports and discussions of this convention can be obtained from the Playground and Recreation Association of America, New York.

The Social Center Association of America, Astor Place, New York, continued through the year a propaganda general in character.

The New York Social Center Committee, organized in March, 1912,

financed by private subscriptions, is now conducting an exhaustive experiment in the wider use of school buildings along democratic self-supporting lines. This committee has obtained from the New York Board of Education authority to try experiments at its discretion in a regular public school building, Public School 63 in the lower east side of New York. The activities so far developed have been: public open-air dancing; public indoor dancing; Camp Fire Girls' work with a number of groups; political discussion in the large auditorium; a social and civic club, self-governing, made up from the neighborhood; a local citizens' committee with authority to gather and expend money through a charge for admission and other methods; a local self-governing and self-supporting orchestra which provides music for public meetings, etc. A moving-picture show will be installed shortly and conducted on a commercial basis, its profits being devoted to the embellishment of the school building or the inauguration of non-profitable activities. The public dances were markedly successful, being attended by from four to six hundred people nightly, who paid five cents admission, the dances producing a nightly profit of about \$30. It proved possible to maintain complete order without the presence of any other officials than the local committee of citizens who inaugurated the dances. Both sexes and all ages were present. The general idea of the New York Social Center Committee is to demonstrate that the public school buildings can be used as organizing centers for community life, complete democracy and local self-government being possible and the elements of self-support being very prominent. This experiment will probably demonstrate that New York City can double its public recreation activities and at the same time reduce its expenditures on recreation, with a great resultant stimulation of neighborhood spirit and self-respect. (New York Social Center Committee, 50 Madison Avenue, New York.)

A very rapid development of true social centers has taken place in

the southwest, especially in Texas, where more than a score of rural schools have been turned into country-side clubhouses and civic agencies on holidays and after school hours. (Extension Division, University of Texas.)

The Theatre.—No radical movement toward the improvement of the theatre is to be noted during 1912. The drama leagues, founded to encourage good plays, and to influence public taste regarding drama, have gradually increased in number and are now to be found in Chicago, Boston, Philadelphia, Spokane, Madison, Brooklyn, Hartford and elsewhere, with state branches in New York and other states. The generosity of public-spirited individuals has given to Northampton, Mass., a municipal theatre. The concentrated nature of American drama, on its business side, the domination of a few New York syndicates over the theatrical circuits of most of the country and of certain New York and western vaudeville syndicates over the vaudeville theatres of the entire country, stand as a serious and apparently a permanent obstacle in the way of dramatic improvement. The creation of municipal theatres or of stock companies playing in school auditoriums, etc., supported coöperatively or by the government, appears to be the only probable outlet from the present thoroughly bad situation.

A children's theatre was opened in New York in December, on the roof of the Century Theatre, late the New Theatre (see AMERICAN YEAR BOOK, 1911, p. 332).

American audiences were reminded of the potential importance of drama, as a social and educational force, by the visit of the Irish Players during the spring of 1912. The Irish Players, through the control of only a single theatre in Dublin, have stimulated the creation of an entire dramatic literature, much of it of nothing less than first rank, and have contributed largely to the growth of national self-consciousness along æsthetic lines throughout Ireland. They achieved a very marked success and will return during 1912-13. (See also XXXII, *The Drama*.)

Civic Responsibility for Leisure Time.—The question of substitutes for the saloon, the commercialized dance hall, etc., has been kept in a state of agitation by a number of sensational events, notably the police scandal in New York and the struggle over white slavery and vice in Chicago (see VII, *Municipal Government*). A growing number of authorities are coming to agree that any conceivable form of regulation, as an ultimate solution of the saloon, gambling and vice problem, must of necessity fail. An increasing number of thinkers have come to regard the saloon, vice, etc., as being primarily a terrible evidence of the failure of the American communities to provide wholesome channels for the expression of social instinct, emotional exuberance and legitimate interest as between the sexes. This growing public view will result in many important movements in coming years, but as yet has not affected results in any visible way. Isolated examples of the tendency to seek substitutes for vicious amusement are seen in the municipal dance halls of Cleveland, which have been phenomenally successful; in the work of the Social Center Corporation, which has recently established a large model dance hall in Newark, N. J.; in the growth of the so-called "Dreamland" dance halls in St. Louis, Milwaukee, Cleveland, etc. The agitation for social centers, adult playgrounds, the opening of the churches to social use, and all allied movements, are drawing for argument more and more extensively on the oppressive facts, which are becoming universally known, relative to the "white-slave traffic" and the alliance between politics and the saloon.

Recreation commissions or analogous bodies, all of relatively recent establishment, are now operating in St. Louis, Milwaukee, Kansas City, Portland, Oregon, and New York. These commissions assume the general function of investigation and the formulation of municipal policies with reference to leisure time; in addition they frequently administer some or all of the recreation facilities which are now being conducted by municipalities. The New York

Recreation Commission will, during 1913, operate gymnasia, recreation piers, playgrounds, and possibly an indoor recreation center on a self-supporting basis. This body has likewise been called on by the Board of Estimate and Apportionment of New York to present, for consideration of the city authorities, a large programme of municipal action in the leisure-time field.

Motion pictures continue to hold the field as the great leisure-time avocation, reaching more people than are known to patronize any other form of recreation save the saloon. In October, 1912, there were about 16,000 motion-picture theatres in the United States, with a daily audience of probably 7,000,000. Of this audience probably 1,000,000 were children. Motion pictures were being produced at the rate of about 100 subjects per week, each subject being duplicated a hundred times or more and being seen in the course of a month by more than 10,000,000 people. The situation with reference to patents, peculiarities in the distribution of films, etc., which was outlined in the YEAR BOOK for 1911 (p. 332), still holds good. In place of two large rival companies, there are now three, known as the Motion Picture Patents Co., the Universal Film Mfg. Co., and the Film Supply Co. of America. In addition the Kinemacolor Co., producing motion pictures in color photography, have increased the number of their theatres and are now producing new films weekly for the American market. The number of special-release films and feature films has gradually increased, these being exploited according to state-right arrangements and in theatres devoted to them exclusively. Thus far there has been no distinct evidence of any cessation in the growing popularity of motion pictures, and there has been, by general consent, a visible improvement in the average quality; but the American motion picture show is still far lower in its general quality than the average film show that may be seen in almost any of the European countries. This is true, especially of the local methods of exhibition and the features, such as vaudeville

and music, which are used to supplement the films.

Motion pictures have been used during 1912 for various journalistic and political purposes. A violent controversy raged over a series of films in which the Mormon church was attacked through methods of dramatic presentation. A film produced under the auspices of the American Federation of Labor, dramatizing the story of the McNamara brothers and defending them, was circulated prior to the confession of the McNamara brothers and served to focus the attention of many communities on the journalistic possibilities of motion pictures. An increasing number of propagandist films along civic and educational lines have been produced, dealing with topics all the way from the "loan-shark" evil to the planning of cities. Accident prevention has been taught through motion pictures. Motion pictures are beginning to be used in industrial education, as in instructing locomotive engineers and firemen in methods of operation. The export trade in motion pictures has become enormous, the total volume for the year ending June 30, 1912, being, according to federal statistics, 80,000,000 ft. It is a noticeable fact that those American producers who are exporting largely to other countries, where they are compelled to compete without tariff protection against French and Italian manufacturers, show a marked improvement in the quality of their output, and America receives the benefit of this competitive influence.

The possibility of the use of motion pictures for regular school instruction has been greatly advanced through the placing on the market of the Edison miniature machine called the "home kinetoscope." This machine can be operated by practically anyone under conditions of perfect safety, as it uses only a low-power lamp and its film is fireproof. Regarding his plans for the home kinetoscope, Mr. Edison has stated: "We are going to have pictures covering completely the eight years' course of study in the elementary schools, and for an hour every day during the eight years the children

will be taught through the medium of motion pictures."

The National Board of Censorship of Motion Pictures (New York) has continued in practically complete control of the motion pictures exhibited in America. This control is limited in the main to the moral aspects of the picture film, and has been remarkably effective from this standpoint. Complaints against motion pictures as causing a lowering of moral standards have largely ceased and numerous investigators in different parts of the country have reported that, while the intellectual quality of the average motion picture is still rather poor, the moral quality is acceptable. The National Board of Censorship is at present censoring the programmes of nearly 16,000 theatres and is utilizing the services of a committee of volunteers of about 70 members. Local committees in about a hundred cities receive and act on the reports of the National Board of Censorship. The film is censored from sample copies, and changes or condemnations are carried out in such manner that all subsequent copies made from the original negative print are accommodated to the orders of the board. The board reports a prohibition of objectionable films during the past three years to the amount of about \$2,000,000. It maintains an educational department devoted to the encouragement of improved uses of films for civic propaganda, schools, etc., and to the promotion of local regulative laws throughout the country.

In the local regulation of motion pictures, the Chicago police board censorship has continued its work. Portland, Ore., has established a film censorship. The Detroit police exercise an inquisitorial power over motion-picture films. The commission appointed by the Mayor of New York reported its findings in December, 1911, in the form of a comprehensive ordinance designed to govern the entire subject of motion-picture theatres, including not merely the films, but the methods of building construction, ventilation, sanitation, lighting and general policing. This proposed ordinance, called the Folks ordinance,

can be obtained through application to the National Board of Censorship. The ordinance was passed by the Board of Aldermen in December, but was vetoed by Mayor Gaynor on Dec. 31 because of the censorship clause.

The federal Government has become an important factor in the motion-picture situation, not only through the constant patent litigations which still continue and through the copyright question, but through the interest of Congress in the moral character of films. The interstate shipment of prizefight pictures was forbidden by act of Congress at its last session.

The exhibitors of several states have organized into a national association of exhibitors which held its second convention at Chicago in August, 1912. This association has no clearly defined programme as yet.

Summary.—To sum up the above disconnected review: It may be pointed out, taking New York City as a typical American community, that New York spends annually about \$700,000 for public recreation for its people and about \$23,000,000 for policemen and jails to take care of individuals who have gone wrong largely because of unsupervised recreation. The lecture centers of New York entertain possibly 15,000 people a night, but the saloons, merely to pay their excise tax to the state, must entertain at least 500,000 people a day, including Sundays. A similar inadequacy of public effort in the recreation field is seen in the field of the regulation of commercialized amusements. Some of these amusements, like the moving-picture shows, are either unregulated or regulated through chaotic laws framed in ignorance of the real needs alike of the people and of the business. The saloon is regulated by blue laws imposed from outside the city, which are neither enforceable nor supported by public opinion. Under these conditions New York is confronted with the duty of either adequately supervising its commercialized amusements, now largely unsupervised, or developing an enormous volume of municipalized recreation as a substitute for these destructive forms of amusement.

All that can be told about things that have happened in the interests of the public, in the field of recreation, is small indeed compared with the things that have not happened and that must happen before America can become socially, politically or morally sound.

THE BOY SCOUTS AND CAMP FIRE GIRLS

LEE F. HANMER

The Boy Scouts of America, incorporated under the laws of the District of Columbia, February, 1910, has for its purpose "to help boys to become useful, self-reliant and manly citizens." This it proposes to do by means of a programme of wholesome and attractive activities.

The organization consists of a National Council, operating through an executive board, with headquarters at 200 Fifth Avenue, New York City. Throughout the United States, local councils have been organized to have charge of the scout activities. These local councils are citizens' organizations, and have in their membership representatives from all the important groups and interests in the community. For most local councils there is a scout commissioner, who represents the council in dealing with the national headquarters. Under his immediate supervision there are scout masters, varying in number according to the number of boys enrolled in the local organization. Each scout master has charge of a troop which consists of two or more patrols of eight boys each. Each patrol has a leader and an assistant leader, selected from their own number. Practically all of this work is voluntary. In some of the larger centers it has been necessary to employ a scout executive.

For the national organization there is a chief scout and several national scout commissioners, who are ex-officio members of the executive board. The chief scout is chairman of a committee on scoutcraft consisting of experts on woodcraft, campcraft, athletics, health, etc. The business of the organization is under the immediate direction of a chief scout executive and his corps of department secretaries and field secretaries. The organization is supported by voluntary contributions and by a small margin from the sale of badges,

uniforms, books and other scout equipment.

Before a boy scout becomes a scout he must promise:

On my honor I will do my best:

To do my duty to God and my country, and to obey the scout law;

To help other people at all times;

To keep myself physically strong, mentally awake, and morally straight.

Each scout is expected to do a "good turn" for some one each day.

There are three classes of scouts—tenderfoot, second-class scout, and first-class scout. Requirements for these classes are given in detail in the *Handbook* of the organization. In addition to meeting the requirements for the three classes of scoutcraft, boys may win certain merit badges for proficiency in given lines of activity, such as art, astronomy, athletics, etc. There are 56 activities for which merit badges are given.

The scout masters are selected with the greatest care, and certificates are issued to them only after they have been endorsed by their local council, or, in cases where councils are not organized, by reliable citizens in the community.

The status of the movement on Dec. 26 was as follows:

Local councils	465
Scout masters	6,920
Assistant scout masters	1,258
Towns and cities having one or more troops	3,990
Men on local councils and committees (about)	14,000
Boys enrolled (about).....	300,000

Camp Fire Girls of America.—In March, 1912, the Camp Fire Girls of America was incorporated under the laws of the District of Columbia. The stated object of the organization is "to apply the power of organization to the promotion of such activities for girls as will most effectively make for physical vitality, personal

efficiency, and spiritual and intellectual vigor, as well as to preserve the largest possible amount of beauty, inspiration and romance in their daily lives."

The national body consists of a board of electors, whose chief function is the election of a board of managers to carry on the work of organization. From the board of managers is appointed an executive committee, which exercises the usual executive functions and controls the organization and direction of the activities, finances, promotion and publicity.

The symbol of the organization is fire; the watchwords are "Work, Health, and Love"; the call is "Wohelo," which is formed from the first two letters of the watchwords. The law of the Camp Fire Girls is: "Seek beauty; give service; pursue knowledge; be trustworthy; hold on to health; glorify work; be happy."

There are three grades of Camp Fire Girls—wood gatherer, fire maker, torch bearer. A girl who wishes to join the organization must announce her decision to become a Camp Fire Girl at a monthly meeting of her local group and repeat the law of the camp fire. To become a fire maker a girl must have been a wood gatherer for not less than three months, and have met the 14 definite requirements given in the *Camp Fire Book*.

The person in charge of a local camp fire is known as the guardian of the fire. She secures her commission from the national headquarters, located at 118 East Twen-

ty-eighth street, New York City, after she has satisfied the board of managers that she is fitted for the position. When several camp fires have been formed in one community, a chief guardian may be appointed, whose task it is to unify the camp fires under her jurisdiction.

Honors may be won by the girls in crafts as follows: health craft, home craft, nature lore, camp craft, hand craft, business, patriotism.

Some of the requirements prescribed for the grade of fire maker indicate the nature of the activities: To help prepare and serve, together with the other candidates, at least two meals for meetings of the camp fire; to mend a pair of stockings, a knitted undergarment and hem a dish towel; to keep a written classified account of all money received and spent for at least a month; to name the chief causes of infant mortality in summer and tell how and to what extent it has been reduced in one American community; to know what to do in the following emergencies: clothing on fire, person in deep water who cannot swim, open cut, frosted foot, fainting; and to know what a girl of her age needs to know about herself.

The organization now has local camp fire groups in every state in the Union, also in the District of Columbia, Canada and Hawaii. There is a total of 1,018 local camp fires and 1,285 regularly commissioned guardians. Funds are secured by personal contributions and a margin from the sale of handbooks and supplies.

SOCIAL WORK OF THE CHURCHES

CLINTON ROGERS WOODRUFF

The Federal Council of the Churches of Christ in America held its second quadrennial meeting at Chicago, Dec. 3-6, 1912. Numerous subjects were discussed, including questions of evangelism, family life, sanitation, marriage and divorce, and social justice. The substance of the platform unanimously adopted was:

The churches must stand:

For equal rights and complete and

equal justice for all men in all stations of life.

For the protection of the family by the single standard of purity, uniform divorce laws, proper regulation of marriage and proper housing.

For the fullest possible development for every child, especially by the provision of proper education and recreation.

For the abolition of child labor.

For such regulation of the conditions of toil for women as shall safeguard

the physical and moral health of the community.

For the abatement and prevention of poverty.

For the protection of the individual and society from the social, economic and moral waste of the liquor traffic.

For the conservation of health.

For the protection of the worker from dangerous machinery, occupational diseases and mortality.

For the right of all men to the opportunity for self-maintenance, for safeguarding this right against encroachments of every kind, and for the protection of workers from the hardships of enforced unemployment.

For suitable provision for the old age of the workers and for those incapacitated by injury.

For the principle of conciliation and arbitration in industrial disputes.

For a release from employment one day in seven.

For the gradual and reasonable reduction of the hours of labor to the lowest practicable point, and for that degree of leisure for all which is a condition of the highest human life.

For a living wage as a minimum in every industry and for the highest wage that each industry can afford.

For the most equitable division of the product of industry that can ultimately be devised.

At this meeting 32 religious bodies were represented. Originally it was confined to Protestant denominations, but at the Chicago session this word was eliminated from its declaration of purposes so as to open the way for the coöperation of all churches. Its amended declaration is:

1. To express the fellowship and catholic unity of the Christian church.

2. To bring the Christian bodies of America into united service for Christ and the world.

3. To encourage devotional fellowship and mutual counsel concerning the spiritual life and religious activities of the churches.

4. To secure a larger combined influence for the churches of Christ in all matters affecting the moral and social conditions of the people.

State and Local Federation of Churches.—The work of local federation has increased during the year in the following directions:

1. A complete directory of state, county, district, city and other federations has been prepared by G. Frederick Wells.

2. Several state and city federations have engaged executive secretaries on full time, and in other communities social service secretaries have been appointed to act for all the churches in the community.

3. The Federal Council has secured correspondents in practically all these communities to keep the national and the local works in touch with each other. Special field commissioners of the Council are also rendering service in this interest.

4. The Federal Council is assisting in getting these federations into working relationship with each other and in the standardizing of their policy and work.

Federations of churches now exist in the following states:

Arizona	New York
Connecticut	North Dakota
Illinois	Ohio
Indiana	Pennsylvania
Maine	Rhode Island
Massachusetts	South Dakota
Michigan	Utah
Minnesota	Vermont
Nebraska	West Virginia
New Hampshire	Wisconsin
New Jersey	

A Cabinet of Social Secretaries.—

The secretaries of the several church bodies now organized for social-service work have formed a "secretarial cabinet" and are issuing their literature and doing their work in coöperation. The members of the cabinet are:

Charles S. Macfarland, representing constituent denominations of the Federal Council; Henry A. Atkinson, secretary of the Congregational Brotherhood, 19 South La Salle Street, Chicago; Samuel Z. Batten, secretary of the Baptist Commission on Social Service, 1701 Chestnut Street, Philadelphia; Frank M. Crouch, field secretary of the Protestant Episcopal Joint Commission, 281 Fourth Avenue, New York; Charles Stelzle, superintendent of the Presbyterian Bureau of Social Service, 156 Fifth Avenue, New York; Harry F. Ward, secretary of the Methodist Federation for Social Service, Oak Park, Ill.; Warren H. Wilson, superintendent of the Presbyterian Department of the Church and Country Life, 156 Fifth Avenue, New York.

The Men and Religion Forward Movement reached its culmination in the Christian Conservation Congress, described as being "in behalf of a World Christian Brotherhood," held in New York City, April 19-24. Steps to continue the work of the campaign throughout the year were taken in 75 cities.

The General Commission of the Episcopal Church, Rt. Rev. William Lawrence, D. D., Bishop of Massachusetts, chairman, has issued elaborate outlines for parish and diocesan social-service work. During 1912 this commission has been engaged in organizing the forces of the Church, diocesan and parochial, for service, and in coöperating with outside social agencies, especially the Commission on the Church and Social Service appointed by the Federal Council of Churches.

The organization of the Church's forces has consisted mainly of the formation of social-service commissions in the various dioceses, which should have a general oversight of the work of the different parishes in their respective fields. During the year the number of such diocesan commissions has increased from 18 to over 50, most of which are making earnest efforts to meet their peculiar problems. Up to date, the General Commission has refrained from dealing directly with individual parishes, but has operated mainly through the

agency of the diocesan commissions. To date commissions have been organized in the following dioceses: Alabama, Albany, Arizona, Asheville, Atlanta, Bethlehem, California, Central New York, Chicago, Connecticut, Delaware, Duluth, East Carolina, Georgia, Harrisburg, Idaho, Indianapolis, Iowa, Kansas, Kentucky, Lexington, Long Island, Los Angeles, Marquette, Maryland, Massachusetts, Michigan, Michigan City, Milwaukee, Minnesota, Mississippi, Nebraska, Nevada, Newark, New Hampshire, New Jersey, New York, Oklahoma, Olympia, Oregon, Pennsylvania, Pittsburgh, Rhode Island, San Joaquin, South Carolina, Southern Florida, Southern Ohio, Spokane, Springfield, Tennessee, Utah, Vermont, Virginia, Washington, Western Colorado, Western Massachusetts, Western Michigan, Western New York, West Texas.

American Unitarian Association.—The Social Service Department of the American Unitarian Association is not a separate organization, but is one of the working departments of the association. Elmer S. Forbes is the secretary of this department. Besides the secretary there is an advisory council consisting of certain of the general officers of the Association and the chairmen of a number of special committees within the department. The Social Service Department has published a series of pamphlets.

SOCIAL WORK OF RELIGIOUS ASSOCIATIONS

FRED H. RINDGE

Young Men's Christian Association.—At the time of the first convention in Buffalo in 1854, there were 32 organizations on the North American continent; now there are 2,192 with 3,633 employed officers, and a membership of approximately 600,000. There are 8,612 associations in the world. During the past year the Canadian National Council has been formed in place of the Canadian Section of the International Committee.

During the year there has been a marked increase in the social and industrial service of the association, both in the line of promotion and actual achievement. The city and

town associations now have one-sixth of their membership (100,000 men and boys) from the industrial ranks, and 300,000 others have been reached in extension work, through shop meetings, first-aid demonstrations, educational classes, shop athletics, etc. This does not account for 340,000 men touched in the railroad work which now exists on roads covering 80 per cent. of the railroad mileage of the United States. The Railroad Men's Conference, held in Chicago Oct. 3-6, was attended by 1,550 men, including eight railroad presidents, 12 vice-presidents, and many other officials.

The Industrial Department has

continued its work in connection with the cotton, lumber, coal and metal mining, iron and steel industries, in construction camps and Government reclamation camps. There are now 58 buildings costing two million dollars in these centers, devoted almost exclusively to industrial workers. During the year 1,700 foreigners were taught English, 75,000 reached in lectures and 60,000 helped by work at the ports. The Industrial Service Movement has enlisted 2,000 engineering students from 150 colleges in many forms of volunteer service for industrial workers.

The work for rural men and boys has extended to 70 counties, and is being extended through coöperation with teachers and students in agricultural colleges and theological seminaries. A significant development has been the growing appreciation of 25,000 men and boys of the importance of scientific agriculture. There has been a 300 per cent. increase in agricultural contests of 16 varieties, and a general awakening of many rural organizations and communities.

There are 724 student associations in existence, including 82 in colored and 6 in Indian institutions. Nearly 6,000 students engage annually in some form of community service during the year, and a social-service secretary of the International Committee has been called to extend this work. An alumni secretary also promotes social service by college graduates in many cities, through coöperation with the city associations, and secures their coöperation in movements for social welfare.

The work among colored men has been begun at over 100 points, and costly buildings have been made possible by a generous citizen of Chicago, who offers \$25,000 to every city in which the colored population and their friends raise \$75,000 for a colored Association building. Several cities have raised such a fund.

The Boys' Department of the International Committee has added to its force an expert to give all his time to work among working boys. The non-equipment type of work has had a remarkable growth, the secretaries merely having office head-

quarters and working in coöperation with all uplift agencies of the community. Summer and week-end camps have grown to a surprising extent.

A number of new buildings have been provided for work among soldiers and sailors, the work has been extended to army camps, and secretaries were sent with the Atlantic and Asiatic fleets. The Association is now established at ten points on the Canal Zone.

The Men and Religion Forward Movement was promoted largely by Fred B. Smith and his fellow secretaries of the Religious Work Department of the International Committee and of the various state committees, and was successful because of the vigorous coöperation of churches, brotherhoods and other organizations. Sixty-six major cities were visited by the teams of experts, and over 800 auxiliary cities and towns held organized campaigns. Evangelism, bible study, missions, boys' work, social service and community extension were the features emphasized, and no message produced greater results than that of social service and regeneration.

The Educational Department has been furthering larger plans for industrial and vocational training, and the use of stereopticon and moving pictures in many forms of educational work is an interesting development. Over 68,000 men and boys have studied in educational classes.

The physical welfare of men and boys has been greatly furthered by the Health League of some 2,700 members. Over 40,000 men and boys have been taught to swim, and 450,000 have been helped in various extension activities.

Young Women's Christian Association.—There are now 875 associations in the United States with over 253,000 members. The organization and activities are similar to those of the Y. M. C. A. Over 550 industrial establishments have coöperated with the Association in noon-hour meetings and other activities. Approximately 34,000 girls have been placed through employment departments, and 157,000 helped through the Travelers' Aid Work. Especially successful work has been carried on

in the protection and education of immigrant girls (see *Immigration infra*); in southern cotton-mill villages; in helping the industrial girl through vocational guidance, thrift, summer camps, etc.; establishing club houses for nurses and art students; teaching immigrant women and girls; meeting the special needs of the country girl, colored and Indian students, and helping the recently emancipated women of China. During the year the National Board opened its new headquarters building at Lexington Ave. and 52d St., New York.

Young Men's Hebrew Association.—The Y. M. H. A. has 160 local branches in the United States. A national organization was planned

on Oct. 13, at an important meeting in New York City. The usual religious, educational, physical and social activities are carried on. In the New York branch at 92nd St. and Lexington Ave., there was a total attendance of 182,000 Hebrew men and boys during the year; over 22,000 attended lectures and entertainments, and over 4,400 joined the Penny Provident Fund.

Young Women's Hebrew Association.—The organization and activities of the Y. W. H. A. and Y. M. H. A. are similar. The New York City Branch was incorporated in 1903, and among its features are educational classes, a vacation savings bank, and a Wage Earners' Theatre League.

IMMIGRATION

FRANCES A. KELLOR

National Conference of Immigration, Land and Labor Officials.—The most significant national movement of the year in the direction of the solution of the social and economic problems of immigration, has been the organization of a National Conference of Immigration, Land and Labor Officials, which meets annually, and which is working to establish minimum standards of distribution, protection and assimilation. These include the establishment of a Bureau of Distribution in the Department of Commerce and Labor, to deal with all interstate matters, such as the regulation of private employment agencies, furnishing employment, and protection of aliens in transit. For the states, it has worked out a standard employment agency law, standards for state free employment agencies, and certain minimum requirements for dealing with sale of state lands and settlement on private lands.

State Legislation.—A number of states, whose officials are represented in this National Conference, have made distinct advances toward solving the prevailing social and economic problems due to immigration.

New York state, having the greatest port in the country, the most employment agencies, the biggest public works under construction, and

the most private bankers, notaries public, steamship agents, and collection agencies, has long felt the need of helping its immigrant residents. It has therefore provided a Bureau of Industries and Immigration, where any immigrant can get information on any subject of importance to him—be it on naturalization, land investments, classes in English, employment, lost baggage, trouble with his tickets, land opportunities, rights under various laws, accidents, etc. Not only does the Bureau give information, but it advises immigrants, refers them to the agency nearest home that can help them, and oftentimes makes a friendly connection for them which gives them just the lift needed at the time.

New York state has also passed some notable laws for the benefit of the alien, including labor, banking, steamship tickets, notaries public, and property, which stand out as both precedents and models. Then, too, many immigrants get into disagreements among themselves, their rights are infringed, and they are exploited by those willing to take advantage of their unfamiliarity with the country. The delays in the courts cost them time and money; the transients, of whom there are many thousands, cannot wait; a lawyer is expensive. Many an alien smarts under such

wrongs, feeling there is no justice, and sometimes in his despair and cynicism takes it out on his fellow countrymen of less experience than himself.

Realizing the need of relieving the courts of the detail of such small cases, and the immigrant of his inability to invoke the law, a tribunal has been established where the alien's complaints and troubles can be heard promptly, fully and without the slightest expense to him. If the alien is a transient, the complaint, investigation and adjustment may be done all in one day, the matter settled, and the alien on his journey. The fact that the state is interested gets the alien a hearing, without the aid of police or attorneys.

New Jersey has an immigration commission which is studying the conditions and welfare of aliens in the state, and will report to the legislature in 1913.

California has appointed an immigration commission, of which Robert Watchorn is chairman, which will study conditions in the state, and will be ready for the increased immigration which it is believed will result from the opening of the Panama Canal.

Chicago has a municipal unemployment commission; Wisconsin is enlarging the scope of its immigration work; and Massachusetts is contemplating the creation of a commission to look into conditions of aliens in the state.

These government activities indicate that the states believe that the newly arrived immigrant, ignorant of our language and customs, unemployed and without a home, is in need of a better understanding, greater care and protection by both states and cities, and that the field so wholly left to philanthropy is also the concern of the state.

Benevolent Organizations.—The activities of benevolence have been largely concentrated upon our home problems. The Council of Jewish Women has enlarged its excellent work of following up each Jewish girl, and through its excellent corps of volunteer workers, every newly arrived girl, especially in cities, is visited by an interested friend im-

mediately on arrival at her destination.

Another organization dealing with this same problem is the International Institute for Young Women of New York City, organized by the National Board of the Young Women's Christian Associations. In its two years' existence this institute has shown that similar work is a pressing necessity in any industrial city of immigrant population. For the immigration year of July 1, 1911-July 1, 1912, this institute reports 3,800 girls (other than Jewish) representing 27 non-English speaking nationalities, who emigrated to America to live in New York City (Manhattan and the Bronx only). With a negligible number of exceptions, these girls were between the ages of 16 and 24, the greater number falling below the age of 20.

Of the 3,800, 517 girls could not be found. Passing the vital question of protection, however, it can only be pointed out here that the educational and Americanizing agencies, at work among immigrants, do not reach these women, and that they marry in the United States and rear their children, our first generation "Americans," with little comprehension of American standards and limited understanding of the conditions and influences at work upon their children. The inevitable result, of inversion of normal relationships, wherein children are deprived of the natural guidance of parents and their premature independence makes them "boss" of the family, is slowly dawning upon Americans to the point of their realizing that the solution of the immigrant problem lies not alone with the children of immigrants, as heretofore believed, but with the immigrants themselves upon their arrival in America.

The problems of transportation have been met by the Immigrants' Protective League in Chicago, and the North American Civic League for Immigrants in New York and New Jersey. The former meets aliens on arrival and sees that they reach their destination safely. The latter has established an Immigrant Guide and Transfer Co., which meets immigrants

on Ellis Island and delivers them to their addresses, thus saving them from exploitation from porters, runners and expressmen, who so frequently overcharge, rob and misguide them. This organization has met over 50,000 immigrants since it was started, two years ago.

The National Employment Exchange of New York City, financed chiefly by philanthropy, is a unique attempt to solve the unemployment problem by competition.

Night courts for naturalization have been tried in New York state, and there has been a marked increase in the number of public schools offering citizenship courses. Camp schools and seasonal classes for alien children temporarily resident in can-

neries have been tried in New York and Massachusetts. There is a general awakening on the part of small communities to the fact that they should not permit colonies with different standards of living to exist in their midst.

In some of the cities, the North American Civic League for Immigrants has been supplying domestic educators, who are trained in domestic science and nursing, who go into the homes and teach the mothers the use of American houses, ventilation, sanitation, care of children, preparation of foods, marketing, etc. A number of the schools have also added school visitors, who visit the homes and look after the interests of the children.

COÖPERATION

JAMES FORD

The Coöperative Movement in the United States.—Coöperation in the United States is still disorganized and chaotic. New associations for retail business, manufacturing and banking are still formed each year in large numbers throughout the country. Many of these associations, though bearing the name "coöperative," are not such but are joint stock companies which restrict membership and vote by shares. Only a small portion of these societies are federated with other societies, and no such federation embraces more than a small fraction of the associations within its state, nor embraces more than a half-dozen states. It is therefore impossible to present satisfactory statistics either of the status of the movement or of its growth during the year.

The most extensive form of coöperation in the United States is the building and loan association, which finds its membership among all classes of the population, and is now estimated to comprise a membership of 2,333,000. Workingmen in American cities and towns also frequently establish local coöperative stores, usually rough copies of the British Rochdale type; but these stores in the East are not federated, and struggle single-handed with the in-

experience and ignorance of their members, the indifference of the community and the hostility of the retail and wholesale dealers. The mortality rate among these societies is therefore high. Several hundred such stores are, however, successful, due to wise management, loyalty of members or local need. The Lowell Coöperative Association, of Lowell, Mass., thus has a membership of 2,200 and annual sales of over \$200,000, distributing about \$15,000 annually as dividends on purchases. The number of such associations has increased rapidly during the year 1912, in a conscious attempt to meet the high cost of living. But much space has been given by daily newspapers to futile haphazard ventures non-Rochdale in type. These have been exploited as "coöperative," and their lack of success has discredited true coöperation among certain classes. Such spurious organizations of the winter of 1911-12 were the United Stores Association and the Housewives League of New York City.

Associations of Recent Immigrants.—More hopeful are the associations of recent immigrants, of which large numbers have been founded during the past year. In the East, such associations are formed by English immigrants, trained in coöperative

methods in their home country, and by Swedes, Germans, French, Belgians, Italians, Poles, Lithuanians, and Finns. In New England about 20 such associations were organized among members of these nationalities, earning from \$8.00 to \$20.00 per week, and at least one such group, the Finns, have established a federation of societies (Finnish), the Union of New England Coöperative Stores, for common purchase of goods at wholesale (headquarters at Kaleva Coöperative Association, Maynard, Massachusetts).

Socialist Coöperative Societies.—Associations of immigrant Belgians and Italians, as well as many cosmopolitan stores, have been formed during the past year on the socialist (as distinguished from the Rochdale) model. In these shops no interest is paid on share capital, and profits are largely used for socialist or syndicalist propaganda. Such a store, the Coöperative Franco-Belge, played a conspicuous part in the recent strike of woolen mill employees in Lawrence, Mass., furnishing strike aid, bread at cost and a meeting hall, rent-free for the strikers (see XVII, *Labor*). The International Socialist Congress in 1910 passed a resolution urging all party members and all members of labor unions to enter actively into the coöperative movement. This was done on the grounds that "coöperative societies . . . are organized to strengthen the working class by eliminating the middleman, and also by carrying on production, thus educating the working class for the independent direction of its own affairs, and preparing the way for democratization and socialization of industry." In accordance with this resolution the National Convention of the Socialist Party, held in Minneapolis, appointed a special committee to study coöperation. This committee submitted a favorable report. The number of socialist coöperative societies formed or projected during the year is apparently abnormally large. The editor of *The Masses* (New York City) is authority for the statement that several hundred societies of this type have been organized, many of which are federated for wholesale

purchase of goods. The American Coöperative Alliance (197 E. 31st St., Paterson, N. J.) unites several such associations in New Jersey and neighboring states. The Coöperative League (42 E. Houston St., New York) comprises several local associations, and under the able leadership of Albert Sonnichsen, is conducting a valuable experiment in coöperative organization on a centralized representative basis.

The Right Relationship League.—In the Middle West the most promising coöperative movement of consumers is the Right Relationship League (Headquarters, Guarantee Bldg., Minneapolis; organ, *Coöperation*, monthly). The movement in June, 1912, comprised 112 societies, and operated 142 stores in Minnesota, Wisconsin and North and South Dakota. About 20,000 families of town workmen and of farmers are members. Nine hundred and seventeen new members were enrolled in the first half of 1912. The League, which is now six years old, keeps from six to eight organizers in the field all the time, establishing new coöperative groups. The Rochdale business principles are followed with, however, one notable variation in the method of establishing new societies, for the Right Relationship League ordinarily buys out the existing storekeeper of a village and makes him manager of the coöperative store, instead of starting a competing store with an untrained manager. The Right Relationship League is more widely in touch with the coöperative ventures of this country than is any other coöperative federation. They have for several years convened annual congresses of coöperators, and during the past year have maintained a committee to investigate the coöperative organizations of the country.

California.—On the Pacific Coast, consumers' coöperation of the Rochdale type has been spreading slowly among both workmen and farmers. The *Coöperative Journal*, published in Oakland, California, is the organ of the movement. The Rochdale Wholesale Co. of San Francisco sold \$159,736 of goods to 37 affiliated retail coöperative stores in the first

half of the year 1912. An important innovation in American coöperative practice is the California Rochdale Co. which began business in 1911. The company is formed to centralize the purchasing power and the administration of local coöperative societies, substituting state-wide representative government for the local town-meeting form of government familiar in most associations of Rochdale type. The California Rochdale Co. already (Oct. 1912) manages nine branch stores in California, and is effecting economy through large purchases, reduction of unsalable local stock, and efficient administration. The security of these stores is furthermore provided by their constitutional provision, that each year at least, 10 per cent, of surplus profits shall be written off for depreciation, 10 per cent. shall be set aside for reserve fund, 4 per cent. to the educational fund. This attempt at improvement of coöperative organization is growing, and may give new impetus to the Pacific movement.

Coöperation Among Farmers.—Coöperation is spreading more rapidly among farmers than among city workmen. The associations of farmers are of many types, but usually less democratic and more materialistic than the urban societies. Coöperative stores are formed through the Grange and other farmers' societies, and have grown considerably in number, organization and importance in New England and Pennsylvania during the past year. The National Grange, at the annual meeting in November, 1912, endorsed a plan for the establishment of bureaus of information on coöperative methods by the national and state granges. Coöperative manufacture in creameries, cheese factories and canneries comprises several thousand associations in the northern states. The movement for coöperative warehousing (grain elevators) is apparently growing more rapidly in the Middle West; it is now stated to comprise 2,000 local elevators and 150,000 farmers in Minnesota, North and South Dakota, Nebraska, Iowa and Illinois (organ, *American Coöperative Journal*, Chicago). Coöperative sale of produce is yet more widespread, and

usually involves also coöperative purchase of common requisites as well as common packing and shipping. Associations for common sale of produce are successfully operated among fruit growers of California, Oregon, Colorado and neighboring states. Vegetable exchanges are increasingly frequent in the South and East. Farmers' unions for the sale of potatoes and fruit are being founded in large numbers in Maine and the Atlantic states. The Farmers' Coöperative and Educational Union in the South, the Society of Equity in the Middle West, and the Canadian Coöperative Union in the North (organ, the *Canadian Coöperator*, Brantford, Ont.), have been the most prominent organizing bodies. (See also XIX, *Agriculture*.)

Coöperative credit has received much attention in 1912, due partly to the successful organization of credit unions in Canada and in Massachusetts, under the special act passed in 1909, due partly also to the special inquiries and messages of President Taft which urge the trial of certain European coöperative credit methods to meet the rural money stringency. A special meeting of representatives of the states to consider this problem, was held on April 1-6, 1912, preceding the Southern Commercial Congress. (See also XIV, *Banking and Currency*.)

Copartnership Housing.—One other European form of coöperation has obtained foothold in America during the past year. As a result of Henry Vivian's visit to Canada, copartnership housing associations have been established in 1912 at Hamilton and Toronto, Ont.

No other coöperative movement has attained proportions large enough to deserve special mention, but hundreds of local coöperative associations of producers and of consumers doing from \$1,000 to \$3,000 or more of business a year are being formed, growing or dissolving in each annual period. In general it may be stated that the percentage of failures is unnecessarily high because these new societies are unfamiliar with the experience of their predecessors. Where societies are federated and maintain a permanent office to provide model

by-laws, to advise struggling societies, to advance money in times of difficulty, to educate in coöperative methods through leaflets, lectures, journals, auditing of accounts, and through affiliation with the International Coöperative Alliance (London), the movement becomes more secure and of greater social significance.

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VOCATIONAL EFFICIENCY

MEYER BLOOMFIELD

VOCATIONAL EDUCATION

Status of Vocational Education.—The noteworthy features during the past year in the field of vocational education have been a clearer terminology and formulation of practical programmes in the place of propaganda work.

The best summary of experience thus far with vocational training has been presented recently by Dr. David Snedden, the Massachusetts commissioner of education. This is briefly:

1. The presence in any society of a relatively large proportion of skillful and intelligent workers and directors of these workers constitutes a national asset; and any country permitting a large proportion of its youth to grow to maturity untrained as regards skill and as regards habits of industry is thereby impairing the quality of its national endowment.

2. Economic changes and the advance of scientific knowledge have rendered relatively ineffective such historic non-school agencies of vocational education as the workshop with its apprenticeship system, the farm and the home. The average youth of to-day has, on the whole, less opportunity to learn the arts of industry under controlled conditions than had the youth of a century or more ago.

3. For at least many callings vocational education can be carried on in specialized institutions or schools where in the controlling object is to produce recognized types of vocational efficiency.

4. It is in no way inconsistent with accepted ideals of public policy that

the state should both support and control schools for vocational education; and the limits to such support and control are to be found only in the effectiveness of the work which such specialized institutions are able to do.

5. Vocational education under school conditions cannot be carried on by the methods and agencies that have become familiar in connection with general or academic education. Vocational education requires the evolution of means and methods peculiar to itself, and to a degree, at least, quite dissimilar to those found in general education.

6. Effective vocational education presents three distinct aspects, namely: practical participation in productive work; technical studies related to the productive work; and general vocational studies designed to enhance vocational intelligence and ideals. The right conduct of vocational education for many callings and for various grades of natural ability requires that the practical participation should be the basis upon which are to be built technical studies and the related general vocational studies.

7. Little can be done effectively in the direction of "generalized vocational education," or education by a series of exercises designed to prove equally adapted to preparation for a variety of callings; hence, general courses in drawing, mathematics, manual training, commercial studies, applied science, agriculture, etc., however much they may seem to imitate the procedures of a true vocational education, are, nevertheless, usually ineffective and uneconomical as contributing to vocational efficiency.

8. The principal elements of vocational education can be imparted only

by persons who are themselves masters of the craft or the calling which is to be taught.

9. A rightly organized and effective vocational education makes important contributions to mental development, to the establishment of cultural interests, and to the development of civic capacity. These are, under right conditions of teaching, important and valuable by-products of vocational education.

The National Society for the Promotion of Industrial Education, as the leading society in this field, has signalized an active year in its country-wide work by appointing as its field secretary, Charles A. Prosser, formerly deputy commissioner of education for Massachusetts. The work and accomplishments of the Society for the year are summarized as follows:

It is now giving larger attention along this line to a campaign for the practical training of girls and women; has already done much for this cause incidentally and expects to give more consideration to it in the future.

In its efforts to accomplish constructive work the Society is adjusting itself through the services of a permanent secretary giving his entire time to these activities:

1. A clearing house of information for the country as to what has been and is being done in this and other countries.

2. A coöperative agency, crystallizing and focusing the efforts of all the friends of education in such matters as agitation, legislation, study and investigation; the formation of preliminary commissions, the organization and administration of schools. Laymen everywhere are very greatly interested in the problem. Working relations are being set up with all sorts of national, state and local organizations, such as the National Association of Manufacturers, American Federation of Labor, National Metal Trades Association, American Bankers' Association, National Education Association, General Federation of Women's Clubs, vocation bureaus, and state and local branches of national organizations, such as chambers of commerce and commercial clubs.

3. A registration bureau for desirable teachers of vocational education, in order to put school authorities and capable teachers in touch with each other, as well as to be of service to the membership of the Society.

4. Opening the way for the work by getting the right kind of national and

state laws passed. The Society has done much to promote the Page bill at Washington. It is now playing a part in the drafting of comprehensive legislation in some seven states.

5. Promotion of the social aspects of vocational education. Nothing is more apparent to-day than that vocational guidance and vocational education need to go hand in hand with the whole question of compulsory education and the regulation of child labor. To this end the Society must work with vocational bureaus, national and state child-labor committees, as well as with employers and educators.

Training for Business Efficiency.—

The plans under way in the Graduate School of Business Administration of Harvard University, and in the College of Commerce and Administration of the University of Chicago are significant of the new training opportunities in our higher educational institutions. At Harvard the business courses are carried on in close touch with industrial establishments, and in personal contact with the employer. Problems in business efficiency are tested by laboratory methods in the shops of a technical high school, and in the printing plant connected with Harvard University. The department has established a Bureau of Business Research which is analyzing problems in the methods and costs of retail distribution. At the University of Chicago school commercial courses have been grouped into departments, such as those preparing for public service, business administration, and management of philanthropic institutions. Admission to the courses depends on intelligent selection of one of these divisions, based on a life-work plan which the dean supervises as the vocational adviser to the students.

F. V. Thompson, assistant superintendent of Boston Schools, in connection with a special study made for the committee on school inquiry, New York City, has made extensive investigations into the efficiency of commercial education as at present administered. Mr. Thompson believes that present-day commercial education has as little relation to actual business as manual training has to industry. Our commercial education trains only for clerical positions,

which represent the least numerical part of business (about 15 per cent.), and not at all for the buying and selling functions of business, representing the major portion (from 40 to 50 per cent.). Courses in merchandising and salesmanship should be added to commercial courses, he believes. Boston has adopted this suggestion. At the opening of school in September, 1912, two large Boston high schools have inaugurated such courses, namely, the Girls' High School, with 2,100 pupils, and the Dorchester High School, boys and girls, 1,700 pupils.

VOCATIONAL GUIDANCE

The First National Conference on Vocational Guidance, called by the Boston Chamber of Commerce and the Vocation Bureau, met on Nov. 15 and 16, 1910, with 300 delegates from many cities and states present. The Second National Conference was held in New York, Oct. 23 to 26, 1912, under the auspices of the Central Committee on Vocational Guidance, representing New York educators and business men.

Boston Vocation Bureau.—An outline of the work of the Vocation Bureau of Boston, the first in the country, will indicate the nature of the service. The bureau, maintained by public-spirited men and women, contributes its services to the teachers, parents, and children of Boston. It works officially with the school department. Twice a month over 100 teachers, representing every school in Boston, meet to listen to employers, superintendents, occupational experts, and others who discuss various occupations—their advantages and disadvantages, and their educational requirements.

A series of studies into occupations open to Boston boys is being carried on under the direction of Frederick J. Allen of the Vocation Bureau. The following booklets have thus far been published: "The Machinist," "Banking," "The Baker," "Confectionery Manufacture," "The Architect," "The Landscape Architect," "The Grocer," "The Department Store and Its Opportunities for Boys and Young Men." The studies in the near

future will be "The Lawyer," "The Shoe Industry," "The Metal Trades," "The Building Trades," etc.

Training in Vocational Guidance.—Representatives of schools of Boston, Newton, Chelsea, Somerville, and Providence have been sent to take a year's training under the direction of the Boston Vocation Bureau. This training consists of specific field work in vocational guidance under their respective superintendents, with case conferences and related lectures weekly in the Vocation Bureau.

A six weeks' course is offered by the Harvard Summer School which counts as a full half course toward a degree. This course, given in Cambridge, has the coöperation of leading employers, and includes organized visits to industrial and business establishments, following the college lecture.

Coöperating Agencies.—Nearly 40 representatives of large business and manufacturing establishments, superintendents or managers of employment departments have been organized to study with the Vocation Bureau the problems relating to the employment, unemployment, and mis-employment of boys and girls.

Working in coöperation with the Vocation Bureau is the Girls' Trade Education League which has issued upward of a dozen booklets on girls' occupations.

The Home and School Association prints for its 25 parents' associations the periodical called the *Home and School News-Letter*, which deals mainly with the vocational guidance and future life-work problems of boys and girls. The Women's Municipal League's education committee has issued an invaluable series of charts showing opportunities for vocational training in Boston. The Children's Welfare League of Roxbury is organizing a plan of carefully safeguarded placement.

Vocational Guidance in Other Cities.—Among the important enterprises in vocational guidance are the Vocation Bureau of Cincinnati, under the direction of Dr. Helen T. Woolley and Miss Edith Campbell. An extensive system of supervising the granting of the working certificate and the after-school careers of the

children is a feature of the work of the Cincinnati Bureau.

The Vocational Guidance Survey, in New York City, under the direction of Miss Alice P. Barrows, has been making an intensive study of the industrial problems of children in two New York school districts. The New York High School Teachers' Aid Association has been for years coöperating with high school boys and girls in the choice of a vocation. A carefully worked out plan in this direction is that also of the Central High School in Grand Rapids, Mich. Interesting vocational-guidance activities are to be found in the work of the Consumers' Leagues of Philadelphia and Cleveland, and the Alliance Employment Bureau of New York. The Vocational Guidance Institute of Cleveland and the vocational-guidance studies of the New York, Chicago, and St. Louis Schools for Social Workers are among the latest developments.

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EUGENICS

SCOTT NEARING

The Universal Races Congress (July, 1911) and the First International Eugenics Congress (July, 1912) have done, perhaps, more than any two recent events to call the problems of race preservation and race culture to the attention of the world. The term "eugenics" is becoming popularized. In both its positive and negative phases, it is recognized by thinking people as one of the undeveloped concepts which the Nineteenth Century passed on to the Twentieth.

Positive eugenics, involving an improvement in race standards and an elevation in race ideas, is primarily a matter for education. Custom alone, voicing the crystallized public sentiment of an age, can determine the mating of those of high civic worth. That standards might be elevated by this means, the available facts of biology seemed to prove beyond cavil: that they will be so elevated is a hypothesis which gives us pause. The work of Francis Galton, E. Ray Lankester, Havelock Ellis, J.

Arthur Thomson, W. C. D. Whetham, and Carl Pierson in England, and of C. B. Davenport, David Starr Jordan, and F. A. Woods in the United States, has given the eugenics movement an international atmosphere which lent itself admirably to the organization of an international congress. The enthusiastic eugenists who had hoped to fire the world with eugenic sentiment were seriously disappointed when the Eugenics Congress broke up without formulating a platform or even a working definition of the eugenics movement. The cooler heads in the Congress held the reins taut, however. There was a wide divergence of opinion, and a charming freedom of expression, but not a hint of general agreement on any fundamental proposition. The Congress afforded an opportunity "for exchange of views and mutual instruction"; in no sense was it "a scientific body, equipped to work out a platform of concerted action." The meetings were free of sensationalism. On every hand, the unreadiness of the eugenics movement for formal definition or scientific statement was acknowledged, but a firm conviction of the ultimate scientific value of eugenics was almost universally entertained.

Really effective work has been done in negative eugenics. Here the majority of a society, acting through legislation, may segregate or sterilize the defective minority in a way that will finally remove any possibility of their handing on their defect to a future generation. Eight states (Indiana, Washington, California, Connecticut, Nevada, Iowa, New Jersey, and New York) have passed sterilization laws. The whole movement is of recent origin. The Indiana Law was passed in 1907, the New York Law in 1912. Under these laws various classes of defectives, habitual criminals, feeble-minded per-

sons, inmates of public institutions and reformatories and others may, upon a decision reached by the court or by a board of medical examiners, be sterilized by such process as the medical authorities in charge of the case determine. In some cases, these laws are purely punitive; in others, they aim to benefit the person operated upon; while in still other states the object of sterilization laws is purely eugenic.

During 1912, in addition to a large fund of magazine articles, Havelock Ellis published his *Task of Social Hygiene*, Kellicott his *Social Direction of Human Evolution*, Davenport his *Heredity in Relation to Eugenics*, and Goddard his *Kallikak Family*. Mention should be made of the numerous bulletins, pamphlets, and reports issued by the Eugenics Record Office at Cold Spring Harbor, Long Island and the eugenics laboratory at the University of London and, also, of a series of "New Tracts for the Times," written by Ellis, Saleeby, Newsholme, Geddes and Thomson, Horton and Scharlieb.

Perhaps the most interesting development of the year has been the widening recognition, on the part of eugenists, that eugenics is certainly not the science, and may, indeed, be no science at all. A new movement ordinarily suffers from the work of enthusiasts who proclaim to the world the discovery of a panacea which will prove a specific for all social ills. Although eugenics has not been wholly free from such misrepresentation, its evolution is apparently dominated by a group of strong minds which recognizes the primal necessity of a broad foundation in scientific research for any effective propaganda. Not until such a foundation is laid will the exponents of this new movement be justified in demanding for it a place in the hierarchy of sciences.

SOCIALISM

ALGERNON LEE

The modern Socialist movement dates from about 1848. It should not be confused with the various schemes, theories, and communistic

sects existing before that time, with which it has nothing to do. It may be defined as the international movement of the wage-working class in

opposition to the dominant influence of the propertied classes, which aims at the establishment of economic liberty and equality of opportunity through the abolition of private ownership of socially used means of production, and the substitution of public ownership and democratic administration of all things necessary for the conduct of industry on a large scale. This summary, however, is too brief to be adequate, and the reader is referred for a fuller treatment to the **AMERICAN YEAR BOOK** for 1910 (p. 634).

Socialism does not concern itself with questions of religion or private morality. It is primarily a political movement; but its conception of political action is a broad one; it regards the education and organization of the masses for self-reliant action as essential, while the winning of votes and offices is only a means. It everywhere stands in close relations with the efforts of labor unions for better wages, hours, and conditions.

Beginning in western Europe, this movement has spread to every civilized country, and has everywhere had a persistent, generally slow, and almost uninterrupted growth. It now counts among its adherents from 10 to 12 per cent. of the inhabitants of the civilized world. Its proportionate strength is still greatest in western and northern Europe.

Germany.—In Germany the socialist movement continues its gradual but irresistible advance. At the general election held in January, the Social Democrats polled 4,250,000 votes out of a total of 12,207,000, and elected 110 of the 397 members of the Reichstag; with 35 per cent. of the popular vote the party thus has 28 per cent. of the parliamentary strength. It is the largest party in the Reichstag, and the Government has to hold together all three of the other large parties—Conservatives, Catholic Center, and National Liberals—instead of only two, as before, in order to keep a majority. The Social Democrats take full advantage of this state of affairs, not to force a premature crisis, but to keep the governing powers on the defensive while strengthening their own organization, so as to be prepared for

any emergency. They have firmly opposed the military and naval projects and compelled attention to the rising cost of living, which is aggravated by the tariffs imposed for the benefit of the Conservative land-owners. Toward the end of the year the Government has made some concessions on the latter point, but only enough to show the inherent weakness of the present *régime*, not enough to conciliate popular favor. The annual congress of the party was held at Chemnitz in September. Contrary to widely published predictions, this was a most enthusiastic and harmonious gathering. Reports showed that the organized party membership had grown in a year from 836,532 to 970,112; that in two years the number of Socialists in municipal and communal councils and magistracies had increased from 7,729 to 10,432; that 204 Socialists held seats in the legislatures of 19 states; and that the party press had been greatly strengthened. No essential change was made in the party's policy. (See also IV, *Germany*.)

Norway.—A general election was held in Norway in November. The Liberal-Conservative coalition was defeated, the Radicals winning a clear majority; the Socialist popular vote grew from 91,000 to 126,000 in a total of 478,000, and their representation in the Storting was increased from 10 to 23.

Russia.—The year has brought a great revival of Russian industry, which had suffered severe depression since the reactionary triumph in 1907. This, together with other forces, has caused a reawakening of the revolutionary movement, which is now almost purely Social Democratic, the old Terrorist wing having practically disappeared, partly through prosecutions, but more largely on account of the exposure of the activity of Eugene Azeff and his staff of police spies and provocators within its ranks. The organization of the wage workers has made rapid progress. The number of strikes in the first eight months was almost equal to the total for 1904, the high-water mark before the revolutionary days. Symptoms of disaffection have ap-

peared in the army and especially in the navy. Mutinous disturbances in both the Baltic and the Black Sea fleet during the summer caused the Government deep alarm. Seventeen marines were sentenced to death, and 108 to penal servitude; but the effect of the prosecutions in intimidating the marines and soldiers was probably more than counterbalanced by the indignation which such severity aroused throughout the country. In the election of the Fourth Duma in the fall, the Social Democrats showed surprising strength, although the highly complex system of indirect class voting, together with arbitrary interference by the authorities, prevented them from electing more than a dozen members. For the first time in five years, great popular demonstrations have taken place—early in the year, to denounce a brutal massacre committed by the authorities in Siberia; again on May 1, to celebrate International Labor Day; then in October, to rebuke the government for juggling the elections; finally in November, to protest against the death sentences already mentioned. In St. Petersburg, during each of these manifestations, most of the factories were left empty for predetermined periods ranging from one day to a week; 60,000 working men and women held parades and mass meetings, and the speeches showed a tone of defiant self-confidence. Similar demonstrations on a smaller scale took place at the same time in many other cities. The November meetings served also to express the determination of the working class to prevent the threatened war with Austria.

The Peace Movement.—The full power of the international Socialist movement has been brought to bear against the ever increasing danger of a European war. As noted in the *AMERICAN YEAR BOOK* for 1911 (p. 343), the Italian Socialists made a brave, though vain opposition to the attack on Turkey, for which they suffered heavily at the hands of the police and the courts. While certain sections of the German and British press and politicians have been fomenting national antipathy, the Socialists of both countries have

been busy allaying it. Among other measures, they issued a manifesto signed by the 110 Socialists in the Reichstag, and the 41 Labor men in the House of Commons, declaring that German and British working people have no reason for mutual hatred; that it is the duty of the organized workers to prevent a catastrophe "by which civilization would be pulled down into the abyss, and numberless human lives annihilated"; and that the enlargement of military and naval armaments, far from being a protection against war, makes the danger more imminent and terrible. The only voices raised against war in the Parliaments of the Balkan states were those of the solitary Socialist deputies at Belgrade and Sofia. The Socialist party organizations of Bulgaria, Servia, Greece, and Turkey promptly issued manifestoes denouncing the war, pointing out that, no matter which side won in battle, the results would be bad for the working people, and urging a friendly alliance of all the states in the form of a federal republic. Anticipating intervention by the Great Powers, the Socialist organizations of Russia, Austria-Hungary, and Italy published manifestoes exposing the culpability of their Governments and calling on the workmen of Europe to prevent the extension of hostilities and support the principle "the Balkan lands for the Balkan peoples." The International Socialist Bureau at Brussels took the matter up, issued a manifesto on similar lines, and decided to call, instead of the regular International Socialist Congress (scheduled to meet at Vienna in August, 1913) a special Congress, which met at Basel on Nov. 24 and 25. Five hundred delegates from 23 nations there concerted means to be used in coercing the governments so as to prevent intervention and a general war. In response to the decisions of this Congress, a vast anti-militarist campaign was undertaken in every part of Europe. While the Congress wisely refrained from anything that might savor of bluff or bluster, the authorities were given to understand that any defiance to the popular demand for peace so widely expressed might lead, not only

to a great strengthening of the Socialist voting strength in all countries, but possibly to general strikes, insurrections, and mutinies in the military and naval forces. As these pages go to press it seems that the immediate danger of European war has been averted, and the credit for this is due largely to the organized action of the working people.

United States.—The national convention of the Socialist party of America was held at Indianapolis, May 12 to 18. Eugene V. Debs, of Indiana, was nominated for President and Emil Seidel, of Wisconsin, for Vice-President. The constitution of the party was thoroughly overhauled, but no considerable change in policy was made. One of the most important acts of the convention was the adoption, afterward confirmed by referendum, of a clause prohibiting the advocacy of crime, violence, or sabotage as methods of working-class action. This was declared to be necessary on the ground that a small but active element in the party or on its fringes had of late shown a tendency toward the support of these essentially anarchistic methods. (See also I, *American History*.)

The Socialist city administration in Milwaukee (elected in 1910) was defeated in the spring of 1912 by a fusion of the Republican and Democratic forces. Victor L. Berger, the only Socialist in the Sixty-second Congress, was defeated in November by the same means. But this was compensated by the increase of the Socialist vote in the nation to about 900,000, as compared with 424,000 in 1908, and by the election of an increased number of Socialists to state legislatures and local offices. The party organization now numbers about 125,000 dues-paying members. The Socialist party took an active interest in the trial, on capital charges, of nine members of the Brotherhood of Timber Workers, at Lake Charles, La., and of three mem-

bers of the Industrial Workers of the World, at Salem, Mass. Both trials grew out of earlier strikes—the latter out of the historic textile workers' strike at Lawrence (see XVII, *Labor*). In both cases the accused workmen were acquitted, and the result has been greatly to strengthen the revolutionary movement on both the political and the industrial field.

The thirty-second annual convention of the American Federation of Labor, held at Rochester, N. Y., in November, again demonstrated the growing power of Socialism within the labor movement. Max S. Hayes, whom the Socialist delegates nominated for the presidency of the Federation against Samuel Gompers, received 5,074 out of 17,048 votes, and 5,929 votes out of 16,912 were cast for the resolution favoring organization by industries rather than by crafts. The same tendency is shown by the election of Socialists to the presidency of the International Association of Machinists, the Brotherhood of Journeymen Tailors, and some other national unions, and by the action of the United Mine Workers of America, with a membership of 339,000, and the Brotherhood of Carpenters, with 240,000, in compelling their officers to withdraw from the Civic Federation and adopting resolutions declaring for the eventual abolition of the wage system and establishment of the coöperative commonwealth. (See also XVII, *Labor*.)

The *Appeal to Reason*, a Socialist weekly published in Girard, Kansas, is now being prosecuted by the United States Government for the publication of articles exposing in detail alleged abuses existing in federal prisons. So far, the only effect of the attack has been to swell the circulation of the paper, which now exceeds half a million. Socialists are watching the case with keen interest.

THE LIQUOR TRAFFIC AND PROBLEM

FERDINAND C. IGLEHART

Internal Revenue Returns.—From the report of the Commissioner of Internal Revenue of the United States

for the fiscal year ending June 30, 1912, we learn that there were withdrawn for consumption, 2,449,331 gal.

of spirits distilled from apples, peaches, grapes, pears, pineapples, oranges, apricots, berries, prunes, figs and cherries, and 133,377,458 gal. of spirits made from other materials than those mentioned. The amount of spirits withdrawn in 1911 distilled from fruits was 2,434,045 gal., and spirits distilled from other materials, 132,166,148 gal., indicating an increase of 1,226,596 gal. withdrawn in 1912 over that of 1911. The government report shows that the increase is in the license territory. Sixty-two million one hundred and eight thousand six hundred and thirty-three barrels of fermented liquors were withdrawn during the year 1912, as against 63,216,851 bbl. in 1911, showing a decrease of 1,108,218 bbl. of withdrawals in 1912, as against those of 1911.

The government tax on these liquors for the year 1912 was: on spirits distilled from fruits, \$2,694,264.47; and on spirits distilled from materials other than fruits, \$146,715,203.60. The tax on spirits distilled from fruits in 1911 was \$2,677,449.02, and on spirits distilled from other materials, \$145,382,763.32, which indicates an increase of \$1,349,255.73 for 1912 over 1911. The report also shows that for the year 1912 the tax on fermented liquors, ale, beer, lager beer, porter and other similar fermented liquors, was \$62,108,633.39, while the receipts from the same source the year before were \$63,216,851.24, showing a decrease of \$1,108,217.85 for the year 1912.

Status of Liquor Laws.—Despite the fabulous amount of liquors manufactured and sold, the wet and dry map of the country shows that the saloon has been voted out of two-thirds of the geographical area, and from one-half of the population of the country, the rural districts generally voting "no," and the large cities generally voting "yes" on the license question.

With the exception of West Virginia, there has been very little change in the excise situation in the United States during the year 1912. In the eight states, Maine, Kansas, North Dakota, Oklahoma, Georgia, Mississippi, North Carolina, and Ten-

nessee, the prohibitory laws have been retained.

Unsuccessful attempts were made to repeal the prohibition laws of Georgia, Kansas, Maine, Mississippi, and Tennessee.

The states which are under local option of one form or another are Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, Ohio, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

The states which have license with no local option are New Jersey, Pennsylvania, and Nevada.

During the past year there was little or no change in the temperance situation in Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Louisiana, Massachusetts, Missouri, Nebraska, Minnesota, New Hampshire, New York, Rhode Island, South Carolina, South Dakota, Texas, Virginia, Washington, and Wisconsin.

California.—Under the new local-option law in California there has been a keen contest over the liquor question at the polls, which resulted in 140 municipalities going dry during the year 1912. The temperance people claim that woman suffrage was quite a factor in the fight against the saloon. There are now 530 municipalities in the state where intoxicating liquors are prohibited.

Arkansas.—During the past year there was a contest in Arkansas for state-wide prohibition which was unsuccessful. Under local option by smaller units, the saloon had been removed from 63 of the 75 counties, and from 90 per cent. of the population, which condition remains unchanged.

Kentucky.—The saloon was driven from two more counties of Kentucky during the year, which makes 97 of the 119 counties of the state dry. More than 75 per cent. of the population lives in no-license territory.

Indiana.—In Indiana, where the temperance forces had made such singular progress, there was a reaction

and considerable ground was yielded to the saloon. This was occasioned by the repeal of the county local-option law.

Ohio.—In Ohio, where the anti-saloon forces are as well or better organized than anywhere in the country, a number of the counties went from no-license to license during the year.

The constitution of the state of Ohio adopted in 1851 forbade the licensing of the liquor traffic, but empowered the legislature to provide against the evils that might result from such traffic. An amendment to the constitution adopted on Sept. 3, 1912, provides for the licensing of the liquor traffic, but limits the number of saloons to one to each five hundred of population, less than the present number under local option. The means by which the number of saloons is to be reduced and the amount of the license to be assessed, are to be determined at the coming session of the legislature. This does not interfere with the present local-option laws.

Maryland.—The local-option bill for which the temperance people of Maryland had been fighting, passed the lower House of the legislature at the last session and was defeated in the Senate by one vote.

Iowa.—The number of saloons in Iowa was considerably reduced within the year.

West Virginia.—The most significant temperance contest of the year was that in West Virginia. The legislature of that state in 1911 submitted to the people an amendment to the state constitution, providing for state-wide prohibition, and a vote was taken on the subject Nov. 5, 1912. The prohibition amendment was carried by a majority of 92,342. But two counties gave an adverse majority, Ohio, containing Wheeling, and McDowell. The only city giving a wet majority in the state was Wheeling. The churches and temperance societies generally were federated in a vigorous campaign against a well organized and powerful army of liquor dealers.

Liquor in Interstate Commerce.—The shipment of liquors from wet into dry territory under the provi-

sion of the interstate commerce law, has interfered greatly with the enforcement of prohibitory laws in the various states, so much so, that the temperance people believe they cannot have any great advance in their movement without an amendment to the interstate law, preventing such a transfer of goods into prohibition territory. Accordingly, the temperance forces of the country have united in asking Congress to pass the Kenyon-Sheppard bill.

The law at present, as construed by the United States Supreme Court, requires common carriers to receive tendered shipments of intoxicating liquors in one state consigned to persons in another state and transport them as articles of interstate commerce, and it has been held that the interstate commerce transaction is not complete until the goods are delivered to the consignee. Numerous bills have been introduced, but the question of constitutionality has been pressed against them, and their enactment into law prevented. The controverted point has been whether Congress, under its plenary power to regulate interstate commerce, can set forward the time when the interstate commerce character shall cease and the liquors be subjected to state law upon arrival within the state and before actual delivery to the consignee. The Kenyon-Sheppard bill seeks to overcome the difficulty by prohibiting the shipment from one state, territory, etc., into another state, territory, etc., of intoxicating liquors which are intended by any person or in any manner to be possessed or kept or used in violation of its police powers. This bill, which was introduced in December, 1911, was placed on the Senate calendar for consideration on Dec. 16, 1912, and was under discussion when Congress adjourned for the holidays.

The Army Canteen.—A bill to return liquor to the canteen of the United States Army was introduced into the last session of Congress, but was not reported out.

Canada.—Prince Edward Island is under prohibition. Nova Scotia is virtually dry with the exception of the city of Halifax. Newfoundland, with the exception of St. John, and

a few other districts, is practically under prohibition. Quebec has 12 counties and 648 towns and villages out of 1,000 without barrooms. New Brunswick, Manitoba, Alberta, and Saskatchewan have local option in some form or another. British Columbia is under license. A fierce battle is going on in the province of Ontario, between the liquor and anti-liquor forces. Under local option, the people of that province have removed the barroom from 463 townships, while 365 have retained license. Prohibition for the Province of Ontario will be the paramount issue at the next general election.

Europe.—Great Britain comes third in the consumption of beer among the nations of the world. Its annual drink bill is about three-quarters of a billion dollars. The House of Commons is in favor of advanced temperance legislation, but the House of Lords has vetoed any such action. Mr. Asquith and his administration are friendly to temperance legislation.

As a beer-drinking nation, Germany comes next to the United States. The laws of the 26 German states are aimed at the misuse of spirits. Very little restriction has been placed on beer or wine. The Kaiser has surprised his own and other nations by his encouragement of temperance and even total abstinence in addressing students and officers of the navy and army.

Australia.—The drink bill of Australia is about 70 million dollars a year. Local option is being introduced very generally into its provinces.

New Zealand.—The local-option law of New Zealand requires a majority vote to reduce the number of liquor saloons, but a three-fifth majority for prohibition. The last vote was taken a year ago and resulted in 55.3 per cent. against license, and 44.7 per cent. for license, but not securing the three-fifth majority the measure failed and license continues.

Organization of the Temperance Crusade.—The brewers and distillers and retail liquor dealers have their national, state and local organizations, and with a billion and a half income, they are enabled to employ the ablest talent as advocates and lobbyists, the most efficient literature and practical agencies in their campaigns. On the other side there are as organizations, the Third Party Prohibitionists, radical enemies of the saloon for a generation, whose candidates at the last election were for the Presidency, Eugene W. Chafin, and for the Vice-Presidency, Aaron S. Watkins, and which polled 207,965 votes; the Woman's Christian Temperance Union, with more than a quarter of a million members and which has been active for 40 years; the Good Templars, enemies of the saloon, who have been busy in their contest for 70 years; the Sons of Temperance; International Reform Bureau; National Temperance Publication Society; the Independent Order of Rechabites; the Templars of Honor and Temperance; Protestant and Catholic Church Temperance Societies; the Inter-Church Temperance Federation; and the Anti-Saloon League of America, whose representatives occupy 750 pulpits every Sunday of the year and which receives as contributions from the churches of various denominations a million dollars each year.

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XVII. LABOR AND LABOR LEGISLATION

LABOR

CHARLES F. GETTEMY

INDUSTRIAL UNIONISM

The Industrial Workers of the World.—During the year an outbreak of syndicalism, which has been silently at work among the industrial population during recent years, stunned the nation by its apparent suddenness. Syndicalism has been termed by some writers as an advanced stage of industrial unionism. Industrial unionism had its origin in the "mass" organization of the old Knights of Labor, but the real representatives of the movement were the American Railway Union, which conducted the great Pullman strike in 1894, and the Western Federation of Miners, which conducted the Colorado strike in 1904.

The Industrial Workers of the World had its beginning in 1904 at a conference of officials identified with the industrial unions. At a convention held in June of the following year a platform was adopted in part as follows:

The working class and the employing class have nothing in common. Between these two classes a struggle must go on until the workers of the world organize as a class, take possession of the earth and the machinery of production, and abolish the wage system.

We find that the centering of the management of industries into fewer and fewer hands makes the trade unions unable to cope with the ever-growing power of the employing class. The trade unions foster a state of affairs which allows one set of workers to be pitted against another set of workers in the same industry, thereby helping to defeat one another in wage wars. Moreover, the trade unions aid the employing class to mislead the workers

into the belief that the working class have interests in common with their employers.

These conditions can be changed and the interest of the working class upheld only by an organization formed in such a way that all its members in any one industry, or in all industries, if necessary, cease work whenever a strike or lockout is on in any department thereof, thus making an injury to one an injury to all.

Instead of the conservative motto, "A fair day's wages for a fair day's work," we must inscribe on our banner the revolutionary watchword, "Abolition of the wage system."

Industrial unionism is not confined to the Industrial Workers of the World, however. The Western Federation of Miners, which now belongs to the American Federation of Labor, includes all but one or two crafts employed about the mines, and in spirit is revolutionary. The United Mine Workers of America are not far behind, and while still holding to the principle of trade agreements their organization is essentially industrial in form. The movement toward uniting these two organizations into a great mining department of the Federation and the organization of the departments of building trades, metal trades, and railroad employees of the Federation show tendencies toward industrial unionism even within this Federation of craft unions. At the Rochester convention of the Federation in November the question of industrial unionism was debated with vigor, John Mitchell, of the United Mine Workers, being one of the principal advocates for the adoption of that principle. In the convention of the Socialist party this year a reso-

lution indorsing the tactics of the Industrial Workers of the World received the assent of one-third of the delegates.

The Industrial Workers of the World have issued some 70,000 membership cards, but only a small proportion of the members are in good standing. Their aims are similar to those of the European syndicalists and their method is direct action through the medium of the general strike, as distinguished from indirect or political action through the medium of the ballot.

The foothold of this organization in America is confined to foreign unskilled laborers, but their strength is growing rapidly in Europe.

Syndicalism.—The syndicalist movement owes its origin to the entrance into and domination of the French trade unions, or *syndicats*, by the anarchists. Syndicalism and anarchism both aim to reestablish society through social revolution and the general strike, on the basis of free groups of workmen controlling the production of the world. Both aim to destroy patriotism in favor of international solidarity of workers—to substitute the spirit of class for the spirit of nationality. Through the fomentation of multiplied strikes, the increasing of the number and size of strikes, and the sympathetic strike, is created the idea of the social general strike, which will obtain for the working people all of their demands without the aid of political leaders.

The San Diego Disturbances.—Evidences of the spread of the Industrial Workers of the World were illustrated by the so-called free-speech fight in San Diego, and by the strikes of textile workers at Lawrence (see *Strikes and Lockouts, infra*) and other New England mill towns, of the silk-mill operatives at Paterson, and of the lumber workers in Louisiana.

The I. W. W. began to hold public meetings on the streets of the city of San Diego in October, 1910. The utterances of some of the speakers regarding the present form of government aroused the indignation of citizens, who protested, until finally the common council passed an or-

dinance defining certain narrow limits within the city within which public speaking was prohibited. This ordinance was so drawn as to prohibit such speaking within a limit of six blocks in the congested district of the city.

Immediately upon the passage of this ordinance complaint was made to the effect that the council had assailed the rights of the people to free speech in San Diego.

Although the I. W. W. were advised by the city attorney that they had all the rest of the city to speak in outside of the said congested district, they continued to declaim against the so-called invasion of their rights. When the time came to enforce the ordinance, wilful and deliberate violation was made for the purpose of thronging the city and county jails, and thus glutting the business of the courts.

The first arrest for the violation of this ordinance was made Feb. 9. The persons arrested uniformly demanded a trial by jury, knowing that it would be impossible for the police court to afford more than two or three trials by a jury during the course of a week. Bands of men immediately began to invade the city from all parts of the country. It was their purpose incidentally to test the validity of the so-called anti-free speech ordinance, but primarily to clog the machinery of and to overwhelm the city and county government. An armed guard was established at the northern boundary of the county for the purpose of turning back undesirables, and a vigilance committee was organized in the city for a similar purpose.

Although there were about 200 arrests made, these were solely for violating the street-speaking ordinance; there were no acts of violence committed that could be directly charged to the I. W. W.; there were no I. W. W. arrests for drunkenness, nor for resisting an officer, and in no instance could it be proved that any of these men when arrested and searched had any weapons in their possession. Their plan was purely one of passive resistance; annoying, aggravating, burdensome, but not inimical to life or property.

The Paterson silk weavers were the first of the New Jersey strikers, but they were followed by the workers in the Hoboken, Hackensack, Passaic, and Garfield mills. The majority of the workers in all these mills have been organized in the Detroit I. W. W., although at Passaic William D. Haywood and other leaders of the Chicago I. W. W. came into the strike zone, and there were clashes between the two groups of revolutionary labor organizers. The strength of the movement has been difficult to estimate and similarly demands were not formulated with uniformity. Taking them altogether they centered around wages, with the concomitants of overtime pay, the abolition of fines, piece payment, and the bonus system.

Louisiana.—A riot occurred at Grabow Sunday afternoon, July 7. Members of the Brotherhood of Timber Workers, a branch of the Industrial Workers of the World, led by President Emerson and other leaders and numbering 100 or more, began a labor meeting in front of the Gallo-way mill, where there was a strike. No sooner had the speaking commenced than some one fired a shot. Immediately the firing became general. When the riot ended three men were dead and 37 wounded, one of whom died later. On Nov. 2, A. L. Emerson, president of the Brotherhood of Timber Workers, and eight associates, charged with murder as the result of the riot, were acquitted.

The American Federation of Labor.—After a debate that lasted all day, members of the radical wing of the American Federation of Labor were defeated by a vote of nearly two to one in their attempt to have the Federation adopt the principle of industrial unionism in place of its policy of trade autonomy. Two hundred and sixty-four delegates voted against the minority report of the committee on education, which favored the principle of industrial unionism, and 72 voted in its favor. The voting strength of the convention, based on membership in represented bodies, went 10,983 against the minority report and 5,929 for it. After the minority report had been defeated the majority report in favor of the continuance of trade autonomy

was adopted by acclamation. The vote was the first test of strength between the radical and conservative wings and the number of votes polled by the radicals was slightly under their advance estimates. The vote of the United Mine Workers (2,670) and the Western Federation of Miners (506) was cast solidly for the minority report. Other groups that lined up solidly with the radical wing were the bakers and confectioners, iron, steel, and tin workers, printing pressmen, railway carmen, and journeymen tailors.

LABOR ORGANIZATIONS

The American Federation of Labor held its thirty-second annual convention at Rochester, N. Y., in November, 1912. During the year ending Sept. 30, 1912, 260 charters were issued to labor organizations affiliating with the Federation. The average membership reported, and upon whom per capita tax was paid by the affiliated organizations to the American Federation of Labor during the past year, was 1,770,145, an increase over the number reported for 1911, which was 1,761,835. On Sept. 30, 1912, the membership of the affiliated organizations was 1,841,268.

Resolutions adopted favored the initiative, referendum, and recall, including the recall of judges; popular election of United States senators, workingmen's compensation with the retention of employers' liability, old-age pensions, and the repeal or amendment of the Sherman anti-trust law to prevent the prosecution of labor unions under its provisions.

Bucks Stove and Range Co. Controversy.—Samuel Gompers was sentenced to imprisonment for one year, Frank Morrison for six months, and John Mitchell for nine months, for contempt of court, growing out of the Bucks Stove and Range Company case (see *AMERICAN YEAR BOOK*, 1911, p. 351). An appeal has been taken and bail furnished, and, pending this appeal, there is a stay of the sentence.

Danbury Hatters' Case.—The retrial of the hatters' case began on Aug. 26 at Hartford, Conn., with Judge Martin as the presiding judge

(see *AMERICAN YEAR BOOK*, 1911, p. 352). On Oct. 11, after four hours' deliberation, the jury returned a verdict for the plaintiff, D. E. Loewe & Co., for \$80,000, the full amount of damages asked, which, in accordance with the provisions of the Sherman Anti-trust Act, may be trebled and further increased to include costs. A motion to set aside the verdict was denied Oct. 11, and the defendants were given until the first Monday in January, 1913, to file their exceptions. It is expected that appeal will be taken.

The McNamara Case.—After the conviction of the McNamara brothers in December, 1911 (*AMERICAN YEAR BOOK*, 1911, p. 352), a federal grand jury began an investigation of the alleged dynamite conspiracy. After some preliminary work in Los Angeles, the jury began hearing evidence at Indianapolis in January, the line of inquiry being directed toward men other than those already convicted or indicted, in an attempt to learn who were responsible for the hundred or more explosions which had occurred from Massachusetts to California in the last four or five years, and which culminated in the blowing up of the Los Angeles *Times* building in October, 1910.

The inquiry of the federal grand jury lasted six weeks. The three charges upon which the Government based its search for evidence were: (1) violation of the federal laws regulating interstate transportation of explosives; (2) conspiracy to violate the laws regulating transportation of explosives; (3) concealment of knowledge of the guilt of those who committed any of the other two crimes. On Feb. 14, 40 of 54 men indicted by the jury, including the chief officers, members of the executive board, and about 20 business agents or former business agents of the International Association of Bridge and Structural Iron Workers, were arrested in various parts of the United States. Others were arrested later.

The indictment charged Frank M. Ryan, Herbert S. Hockin, M. J. Young, John T. Butler, and Frank C. Webb with conducting the conspiracy through the mail, and named the 54

defendants as abettors. It said that a regular system of pointing out non-union steel and iron construction jobs was carried on, and that the executive members not only contributed money to buy explosives, but assisted in the actual dynamiting.

The trial began Oct. 1, and the testimony of men in charge of work when explosions occurred was taken. Ortie McManigal was on the witness stand for many days. McManigal related his experiences as a dynamiter, telling how for more than four years he caused explosions on structures being built by employers of non-union labor, and making direct charges implicating officials of the International Association of Bridge and Structural Iron Workers. Herbert S. Hockin, one of the chief defendants, was imprisoned in default of an increased bond which was required by the court. He resigned as secretary-treasurer of the Bridge and Structural Iron Workers in November and was succeeded by John E. McCrory. Edward Clark, a former business agent, pleaded guilty to all the charges—five counts of conspiracy and 50 counts of being a principal to the actual illegal interstate shipment of dynamite and nitro-glycerin. On Dec. 2, four of the 45 defendants were discharged by the Court on the ground that the charges against them had not been sustained. The taking of testimony was concluded Dec. 17; on this date also a fifth defendant was discharged, and John T. Butler, vice-president of the Association, was held for perjury. The arguments of counsel began next day and the case was given to the jury on the 26th. After forty-one hours' deliberation, the jury, on Dec. 28, returned a verdict of guilty on all counts in the cases of 38 of the defendants and acquitted the other two. The maximum penalty possible was 39 years' imprisonment. Sentence was pronounced Dec. 30. Frank M. Ryan, president of the International Association, was sentenced to seven years' imprisonment, eight of his principal accomplices received terms of six years, and 24 others were sentenced to terms ranging from one to four years. Six of the defendants, including Clark, who confessed, were released on suspended sentence.

Clarence S. Darrow, attorney for the McNamara brothers at their trial in Los Angeles, was indicted in January for bribery and corruption of jurors in connection with the trial. His trial began in March, and he was acquitted in August. A stipulation was entered into between the district attorney and the attorney representing Darrow, whereby the second trial for alleged corrupting of jurors would be commenced on Nov. 25.

Detective Burns was acquitted of the charge of kidnapping the McNamaras. The indictment against Burns charged that McNamara was not given a legal hearing in court before being transported from Indiana to California, and was based on provisions of the Indiana law. Judge Anderson of the federal court held, however, that the federal law was superior to the state law in this case.

International Brotherhood of Papermakers.—After a conference lasting six days between the representatives of the different organizations employed in the paper-making industry and the representatives of the International Paper Company, a joint agreement was reached on May 14 for a period of two years. The agreement provides for an increase in wages approximating \$250,000 a year. All overtime is to be paid for at the rate of time and a half. A minimum wage is established for all of the mechanical trades and an effective apprentice system is also incorporated. The agreement further provides for arbitration as a final determination of all grievances and disputes.

The National Civic Federation held its twelfth annual meeting at Washington, March 5-7, at which a just industrial peace was the key-note of all the three days' sessions. The most promising step toward this goal was suggested by Judge Martin A. Knapp of the Court of Commerce. He advocated that, whatever the way found for the nation to regulate corporations doing an interstate business, it should include a provision that industrial disputes in these companies be subject to such mediation and arbitration provisions as the Erdman Act now extends to interstate railroads.

CONCILIATION AND ARBITRATION

Arbitration of Controversy Between Engineers and Eastern Railroads.—In the early part of the year the Brotherhood of Locomotive Engineers made a formal demand upon the 52 railroads of the so-called eastern district, not only for an increase of wages because of the higher cost of living, but for a standardization of wages or a uniform rate upon all railroads involved in the dispute, and for certain regulations regarding the operation of electric locomotives and long-distance trolley lines owned and operated by the railroads. These demands were refused by the railroads, with the result that, after a long period of fruitless negotiations, a widespread strike was threatened, which would have been a great disaster to the public. Judge Martin A. Knapp, of the United States Commerce Court, and Charles P. Neill, United States Commissioner of Labor, tendered their friendly offices to the contending parties. The federal mediators acted under the law of 1898 known as the Erdman Act, but snapped red tape in tendering mediation without an appeal from either side. This action resulted in the railways and the engineers agreeing to submit their differences to a private board of arbitration, the members of which they themselves selected. The board so chosen consisted of the following members: Oscar S. Straus, former Secretary of Commerce and Labor, chairman; Daniel Willard, president of the Baltimore and Ohio Railroad; P. H. Morrissey, former head of the Conductors' and Trainmen's Union; Charles R. Van Hise, president of the University of Wisconsin; Albert Shaw, editor of the *Review of Reviews*; Otto M. Eidlitz, former president of the Building Trades Association, and Frederick N. Judson of the St. Louis bar.

The main contention of the railroads was that the increase of wages demanded would add over \$7,000,000 a year to the expenses of the railways involved, at a time when the Interstate Commerce Commission permits practically no increase of in-

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come through freight rates; and that the engineers are now the best-paid men in the railroad service, and an increase of their wages would be an injustice both to the railroads and to all other classes of railroad employees. It was claimed by the engineers that the railroads can easily afford the increase if they properly adjust their finances with regard to capitalization and the extravagant expenditure of money for the purchase, as in New England, of competing trolley and steamship lines.

The Board, in its award made public Nov. 24, did not grant all of the demands of the engineers, but established substantial increases on many of the roads. The Board found that on some roads and for certain classes of service the compensation was too small, and therefore introduced into the award the principle of a minimum wage for the entire district. The award, which dates back to May 1, 1912, and will stand for one year, settles the most important American labor dispute submitted to arbitration since the anthracite coal strike in 1902. In its report the Board suggests the creation of federal and state wage commissions, which should exercise functions regarding labor engaged upon public utilities analogous to those exercised with regard to capital by the public service commissions already in existence. The representative of the engineers on the Board, P. H. Morrissey, dissented from this suggestion, which he said, in its effect, virtually meant compulsory arbitration and was wholly impracticable. All existing rates higher than the minima granted by the Board are continued in force. The railroads comprise nearly all of those in New England, New York, Pennsylvania, Delaware, New Jersey, Maryland, Ohio, Indiana, Michigan, and part of Illinois, or practically all lines east of Chicago and north of the Norfolk and Western Railroad.

New York Joint Board of Sanitary Control.—Charles H. Winslow, in his report on the work of this board (see *AMERICAN YEAR BOOK*, 1911, p. 349) in adjusting disagreements of every kind between workers and employers in the cloak, suit and skirt

industry, shows that in ten months 1,004 cases came before the trade's boards of grievances for arbitration, the majority being successfully adjusted without the presence of the full boards by their deputy clerks. Almost 60 per cent. of all cases were settled by mutual agreement or dropped. Of the rest, 20 per cent. were settled in favor of the union and 17 per cent. in favor of the employers' association. Among the specific improvements of conditions which employees have been enjoying during the 18 months under the agreement are: reduction of hours to 50 a week, extending even to subcontractors' establishments, where hours formerly ran from 60 to 70; a gradual substitution not yet completed of electric for hand machines; the elimination of home work and the diminution of overtime; better distribution of work in the slack system; pay to week workers for legal holidays, together with the setting of a minimum wage for these workers and a general increase of about 10 per cent. in their wages.

STRIKES AND LOCKOUTS

The Strike of Textile Workers at Lawrence, Mass.—During the early months of 1912 one of the most widely advertised industrial conflicts ever fought in New England was waged for nine weeks in Lawrence, the great center of the country's worsted industry, affecting 12 mills and some 10,000 employees. The cause of the strike was the taking effect on Jan. 1, 1912, of the law prohibiting the employment in factories of women and children under 18 years, for more than 54 hours a week, accompanied by a reduction of earnings corresponding to the reduced working time. The full effect of this change was not posted clearly on the bulletin boards, although the mill managers generally complied literally with the law, which required the posting of the hours of labor in manufacturing establishments.

On Jan. 12 an uprising occurred in the Washington Mill and nearly all the workers of that mill, of at least two other mills of the American Woolen Co., and of several indepen-

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dent mills, were persuaded to leave their posts or were driven from their customary work places. Most of these employees who then quit work remained out of the mills from sympathy with the action or were kept at home by intimidation and violence until the strike was finally ended.

Prior to the strike there were three branches of the Industrial Workers of the World in Lawrence, the English, Franco-Belgian, and the Italian, with a membership of about 400. Upon the outbreak of the strike, Joseph J. Ettor, a member of the executive board of the I. W. W., arrived in Lawrence and by his effective leadership was soon able to organize the strikers into a militant body of class-conscious workers. The disturbances in the city immediately attracted a considerable number of other leaders of all grades of importance and of variegated reputations whose purpose was to assist in arousing and inciting the masses of strikers, and it soon became evident that the strike was being directed by men who, speaking at the continuous performance of day and night mass meetings, were pursuing tactics unusual in industrial struggles in Massachusetts.

Many attempts were made to settle the strike by committees of the city government and the legislature, the governor, and the state board of conciliation and arbitration. During the strike the militia, called upon to do a most disagreeable duty, had to perform it under most trying conditions. Denounced as "uniform drunkards" and as "reptiles with bayonets" who were "instrumental in preventing the constitutional rights of free speech, free assemblage, and holding citizens in a state of terror," they maintained order during the weeks when feeling was extremely tense, without firing a shot.

Ettor and his assistant, Giovannitti, were arrested on Jan. 30, charged with being accessories to the murder of a woman killed the preceding afternoon. Ettor was temporarily succeeded by William Yates of New Bedford, and later by William D. Haywood. After a lengthy preliminary hearing, they were held without for the action of the grand jury,

there being no precedent, the justice ruling, for admitting to bail persons charged with so serious a crime. Habeas corpus proceedings were begun in the Supreme Court, but the petition was dismissed without prejudice because it belonged in another court.

On Feb. 12 letters were sent, through the officers of the Central Labor Union, to the agents of the various mills asking for conferences to discuss them. This was the course favored by the mill treasurers and opposed vigorously by the strike committee. But these proceedings were retarded by the excitement caused by the detention of the children scheduled to be sent to Philadelphia on Feb. 24.

The sending away of children was a new departure in this country, but is a practice followed by Continental syndicalists. It was justified by the strikers as a relief measure which would enable them longer to continue the contest, because relieved of the burden of feeding and caring for their little ones, whose sufferings in such struggles are the cause which often compels a return to work. While that was the ostensible reason, there were others which did not involve solely the creature comforts of the children, "to arouse sympathy and enlist support by parading in the streets of New York." Haywood felt that by teaching the children the A. B. C. of socialism their cause would be helped, and Meyer London, Esq., of New York, declared, at a meeting in Faneuil Hall, that "every child will carry a flood of protest and discontent throughout the land." A party sent to New York numbered 200 and ranged in age from four to 14 years.

Strenuous efforts to bring about an end of hostilities were made by many interests in Boston, and several times these were about to succeed when some untoward event in Lawrence seemed to make the time inopportune to grant any concession. After many conferences and the submission of schedules as they were worked out, it was announced March 9 by Chairman Ellis of the conciliation committee that those who went back would work 54 hours a week and re-

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ceive a wage on the average $3\frac{2}{10}$ per cent. higher than on the 56-hour basis, that the increase would be not less than five per cent., and the average at least seven per cent. over the 54-hour schedule. On March 13, at an executive session, the strike committee indorsed "the concessions granted by the American Woolen Co.," that action being ratified later at a mass meeting.

On Sept. 30 a 24-hour demonstration strike was called in protest against the alleged unjust imprisonment of Ettor and Giovannitti. The trial of Ettor, Giovannitti, and Caruso, another leader indicted with them, began early in October in the Superior Court of Essex County. They were acquitted by a jury on Nov. 25.

The Boston Street Railway Strike.

—A strike among the employees of the Boston Elevated Railway Co., which controls practically the entire transit service of the city, took place in June. There was practically only one question at issue between the employees and the company, and that was whether men might organize themselves by their own methods into unions without thereby endangering their hold upon their positions. A settlement was made in July which gave the employees the right to organize as they saw fit.

Anthracite Coal Strike.—The strike in the anthracite regions of Pennsylvania which began on March 31 lasted some seven weeks, during which time about 170,000 men and boys of nearly all the tongues and nationalities under the sun were in idleness. The employers were seven or eight great coal-carrying railroads which directly or indirectly operate many of the mines in the anthracite regions. The subordinate officers of the union had the situation well in hand from the beginning, and in many instances were officially deputized by the various county sheriffs to maintain the law and enforce order when necessity required it.

Conferences between the union and operators led to a settlement in May and resulted in an increase in wages of about $5\frac{1}{2}$ per cent., the abolition of the sliding scale, and provision for a grievance committee.

Other Strikes.—Among other important strikes of the year were: strike of pressmen against newspaper publishers in Chicago in May; strike of longshoremen in Boston and Baltimore; strike of laundry workers in New York City; strike of furriers in New York City, which resulted in the establishment of a joint board of sanitary control; strike of building teamsters in New York City; strike of textile workers in Lowell, Mass.; strike of hotel workers in New York City in May; strike of machinists in New York in May; strike of cotton weavers in New Bedford, Mass.; and strike of silk weavers in Paterson, N. J., in February. A strike of 75,000 garment workers in New York and Newark began Dec. 30.

COST OF LIVING

President Taft, in a message to Congress in February, urged an international inquiry into the high cost of living, asking authority to invite the nations of the world to a conference in Washington or elsewhere to make plans for the investigation of the "high prices that have so distressed the people of the world."

In compliance with the resolution, which passed the House of Representatives in the early part of August, Commissioner of Labor Neill has ordered an investigation of the causes of the high cost and short supply of anthracite coal in New York and New England. The investigation, it is stated, will deal practically with a report on the relation of the increases of wages to the miners to the price of coal.

New York State Commission.—The main purpose of this commission was to examine how far in the marketing of food commodities prices are raised by inadequate and uneconomical facilities and methods of distribution. The markets committee reached the conclusion as the result of its minute investigation that the large retail unit or food department store buying direct, receiving direct, and selling direct is the best economic type in point of efficiency, minimum of waste, satisfactory distribution, and due rewards for management and capital. The committee recommends

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that the charters of the various cities of the state be amended so as to provide for departments of markets charged with the economic and sanitary supervision of food supplies used in the municipalities. The department of markets, it is further recommended, should be charged with the duty of publishing accurate statements of market needs and prices to be sent to producers of food supplies so that they may be protected from extortion and offered facilities for marketing. The committee finds that the primary or wholesale prices should be fixed by systematic auction in lots suitable for purchase by retailers. Such auctions should be conducted under the auspices of the city or of a public organization, not for profit, so that this auction in which all parties interested should have a voice would constitute, on primary prices, a producers' and consumers' market.

Massachusetts Commission on Cold Storage.—This commission upon investigation found that cold storage was not a cause of high prices, and pointed out that any agency which operates, as does cold storage, to increase the general volume of production of certain foodstuffs by making it possible for producers and dealers to market their stock throughout the entire year, instead of being confined to a few months, must have the effect of lowering prices.

Report of the United States Bureau of Labor.—This report on prices for the past 10 years was based on inquiries conducted in important industrial centers in 32 states and covered 15 articles of food, as well as coal. On June 15, 1912, the report showed, 14 of the 15 articles of food were higher than a year before, and 10 had advanced in the past 10 years more than 50 per cent. over the average retail price for the 10-year period 1890-1899.

During the last decade prices of potatoes changed most and sugar the least. Their advances were 111.9 and 8.5 per cent. respectively. During the last year, bacon, which decreased just 1/10 of one per cent., was the only one of the 15 principal articles of food that showed a decline in price, while nine of the 15 advanced

more than 10 per cent., varying from 2.4 per cent for milk, to 18.6 per cent. for round steak. Of the 15, only eggs, butter, milk, and sugar were lower, but the price of three of these four is normally lower during summer than winter.

This was the showing made for the food prices in the last year, according to the report, on the foods investigated:

Decrease in price: Smoked bacon, one per cent.

Increase in price: Fresh milk, 2.4 per cent.; smoked ham, 2.7; hens, 3.8; granulated sugar, 6; Irish potatoes, 7.6; wheat flour, 10.7; pork chops, 11.2; pure lard, 11.3; strictly fresh eggs, 11.8; cornmeal, 12.7; creamery butter, 15.3; sirloin steak, 17.1; rib roast, 17.5; round steak, 18.6.

The advance during the decade, comparing the price June 15, last, with the average for the 10 years, was as follows:

Granulated sugar, 8.5 per cent.; strictly fresh eggs, 26.1; fresh milk, 32.9; creamery butter, 33.3; wheat flour, 39.3; pure lard, 55.3; hens, 58.1; sirloin steak, 59.5; smoked hams, 61.3; cornmeal, 63.7; rib roast, 63.8; round steak, 84; pork chops, 86; smoked bacon, 96.7; Irish potatoes, 111.9.

WAGES

Minimum Wage in Massachusetts.

—After six months' work the minimum wage commission appointed under an act of the legislature to investigate wages and living conditions of women wage-earners rendered its report. The commission recommended legislation looking to the establishment of a minimum wage in the industries in which women are employed (see also *Labor Legislation, infra*). The report says in part:

The administration of the plan proposed by this commission is vested in a permanent commission of three members. . . . It is to be the duty of the commission to inquire into the wages paid to the female employees in any occupation in the commonwealth if the commission has reason to believe that the wages paid to a substantial number of such employees are inadequate to supply the necessary cost of living and to maintain the worker in health. . . .

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If after such investigation the commission is of the opinion that in any employment the wages paid to a substantial number of female employees are inadequate to supply the necessary cost of living and to maintain the worker in health, the commission shall establish a wage board and transmit to it the information it has acquired. This wage board is essentially a board of inquiry and arbitration. It is to be composed of at least six representatives of employers and the same number of representatives of employees. It is also to include a number of disinterested members to represent the public, but the number of the representatives of the public shall not exceed one-half of the number of the representatives of either of the other parties. . . . If two-thirds of the members of such a board agree upon a wage determination, and in such an agreement some of each party will necessarily be represented, the determination is reported to the commission. The commission may then review the recommendation, may approve or nullify any or all of the wages recommended, or may recommit the subject to the same wage board or to a new wage board, but in so far as it concurs in the wages recommended, after public notice of its intention and a public hearing thereon, it may issue an order declaring such wages to be the legal minimum wages for the occupation. After sixty days from the issuing of the order it shall be a misdemeanor for any employer in the occupation in question to employ a woman or a minor for less than the rate of wages specified in the order.

The report, based on data concerning the wages of 6,900 persons engaged in the confectionery business, laundry work, and retail stores was obtained from wage scales. The commission specialized in these trade groups. These data were supplemented in 4,672 cases by information as to personal and domestic conditions. In the cotton industry, also, wages and some personal data in regard to 8,378 female operatives were secured. The full investigation covered 113 establishments in many different localities. Of the 15,278 female employees whose condition was investigated 13,845 were known to be over 18 years of age. The figures presented by the commission show that 41 per cent. of the candy workers, 10.2 per cent. of the saleswomen, 16.1 per cent. of the laundry workers, and 23 per cent. of the cotton

workers earn less than \$5 a week and that respectively 65.2 per cent., 29.5 per cent., 40.7 per cent., and 37.6 per cent. of them earn less than \$6 a week. In these four industries therefore the commission finds low wage rates for a very considerable body of persons.

In the candy industry, with its 41 per cent. of adult women receiving less than \$5 a week, a comparison of wage rates in 11 establishments shows that the lowest wages are confined to four factories, in one of which, indeed, 53.3 per cent. of the employees received less than \$5, while the other seven factories paid not one single employee of 18 or over so low a wage. The difference between these factories in the kind and the grade of their product cannot account for the differences in the wage scale, as both the higher and the lower wage scale prevailed in the factories manufacturing the cheaper line of confectionery. Similar differences between establishments were found in the other industries investigated, showing, in the view of the commission, that the business will bear a higher rate of compensation than that paid by some employers.

UNEMPLOYMENT

Employment Bureau of the Jewish Educational and Charitable Association of St. Louis.—A plan was put into operation whereby the subscribers to the charities have become interested in securing work for the unemployed. In February it was found that the bureau had on its hands nearly 90 persons unemployed and in distress. The subscribers to the charities were approached individually by a written appeal to the effect that work for the able-bodied meant not only self-respect for them but also more funds for those necessarily dependent. A list of the unemployed, giving trade, age, social state and how long out of work, was inclosed. Subscribers were asked to tell friends likely to need help of the work of the bureau. The roster of subscribers was gone over carefully and a classification made by occupations. A meeting of selected prominent men was called and they were

asked to become chairmen of committees of their respective occupations. Each chairman was given a list of persons in his trade or calling who were subscribers to the charities. Each committee thus formed compiled a list of firms in that business. If a garment worker applied for work, the bureau communicated with the committee which could secure such work and as soon as an opening was heard of the bureau was notified.

Intercollegiate Bureau of Occupations.—This bureau, with headquarters at 38 West 32d street, New York City, was founded in October, 1911, for the purpose of bringing together work along lines requiring intelligence and workers with vocational experience, as well as with solid general educational foundations. The bureau aims also to take up the study of the college woman and her work along the lines suggested above, or, in the words of the prospectus:

To investigate the present conditions of women's work, to develop new opportunities, to establish close connections with the colleges and to aid in giving information to undergraduates, to give specific advice regarding equipment for different vocations, and to insure in every possible way a wise choice of occupation and adequate preparation for its demands.

Up to Oct. 1, 1912, which closed the first year's work, the bureau filled 244 positions. There were 739 applicants, 593 calls from employers, and over 1,000 women passed through the bureau in various ways; 50 vocations were represented.

HEALTH AND SAFETY

New York Factory Investigating Commission.—The life of this commission was extended by act of the legislature, and \$60,000 was appropriated for the continuance of its inquiry into conditions affecting life and health in the factories of New York State. A preliminary report was issued based on the inquiries carried forward in the brief period since its appointment and organization in the early autumn. Twenty

the state) were inquired into and 1,836 industrial establishments were visited by its inspectors. All but 200 of these factories were in the city of New York, the remainder, for the most part, being in Rochester, Syracuse, Utica, Schenectady, and Troy. Six specific matters were included in the view of the commission:

1. Hazard to life because of fire; covering fire prevention, inadequate fire-escapes and exits, number of persons employed in factories and lofts, arrangement of machinery, fire drills, etc.
2. Danger to life and health because of unsanitary conditions; ventilation, lighting and heating arrangement, hours of labor, etc.
3. Occupational diseases: industrial consumption, lead poisoning, bone diseases, etc.
4. Proper and adequate inspection of factories and manufacturing establishments.
5. Manufacturing in tenement houses.
6. The present statutes and ordinances that deal with or relate to the foregoing matters, and the extent to which the present laws are enforced.

The commission found the present labor laws and factory inspection inadequate and advocated the compulsory registration of all factories as a first step toward better control of working conditions by the Department of Labor. On the general subject of sanitation, covering as it does cleanliness, toilet and washing facilities, ventilation, heating, lighting, and the disposal of dust and fumes, it was recommended that proper hoods and pipes connected with an exhaust fan be provided and kept in use to free workrooms from steam, gas vapors, dust, or other impurities. As a first step in preventing occupational poisoning, an amendment to the labor law was urged, providing for ample washing facilities with hot water and individual towels and prohibiting eating in the workroom. The report gave special attention to women's labor, and recommended the prohibition of employment for four weeks after childbirth. It also urged an amendment to the labor law providing seats and extending the provision to seats during work, where the process is adaptable to a sitting posture.

A growing tendency on the part

of the New York City Board of Health to refuse work certificates on account of physical deficiency was commended. Legislation was urged providing that no work certificates be issued without a thorough examination and approval of each candidate by the local board of health, the record of the examination to be filed with the Commissioner of Labor. A series of special provisions suggested by the Molders' Union for the prevention of accidents and occupational diseases in foundries were also recommended.

The following recommendations for legislation in regard to factory fire prevention were made: Fire-proof receptacles for rubbish, the screening of gas-jets, and the prohibition of smoking; for rapid exit, the plain marking of exits, the arrangement of operatives and machinery so as to allow free passage and the compulsory installing of fire drills where more than 25 persons are employed above the first floor; for checking the spread of fire, the requiring of wired glass in windows and doors leading to outside fire-escapes and of automatic sprinklers in buildings over seven stories high in which wooden floors or trim are used and more than 200 persons are employed above the seventh floor. Further requirements involving in some cases minor structural changes are also urged. While placing little dependence on outside fire-escapes, the commission makes recommendations tending to make existing fire-escapes more useful. For the most part, the major structural recommendations represent a well-defined effort to make occupancy the basis of fire standards with respect to floor space, number and size of exits, and the provision of automatic means of extinguishment.

The Minnesota Industrial Safety Conference was held at St. Paul and Minneapolis, Dec. 7-9, 1911, under the joint auspices of the Minnesota Bureau of Labor, Industries, and Commerce, and the Minnesota Employers' Association. The conference resulted in a permanent association, to be composed of state, municipal, and insurance company inspectors, for the purpose of improving factory inspection methods and standards. The as-

sociation will meet periodically to discuss specific inspection problems.

Standard Schedules.—The standard schedule for uniform accident reports first drafted at a Chicago conference in September, 1911, and improved at several subsequent conferences of experts, was put into final form in December, 1911, at a joint session of the American Statistical Association and the American Association for Labor Legislation. It has since been adopted by several industrial communities.

Occupational Diseases.—Under the same direction as the standard schedule for accident reports, a committee is now charged with drafting a standard schedule for the uniform reporting of occupational diseases. Six states have recently enacted laws on the subject.

National Conference on Occupational Diseases.—This meeting, held at Atlantic City in June, in conjunction with the annual meeting of the American Medical Association brought out the tardiness of America in giving attention to the heavy drag upon industrial efficiency and the well-being of workers made by occupational disease. The adoption of a standard nomenclature as an authoritative guide to disease and occupation classification was advocated as leading to at least three things: the elaboration and standardizing of record and reporting blanks; more efficient inspection of industrial plants; and intensive investigations of specific occupations and diseases.

Hours of Labor in the Steel Industry.—At the annual meeting of stockholders of the United States Steel Corporation, in April, 1911, Charles M. Cabot of Boston introduced a resolution calling for the appointment of a committee to investigate labor conditions in the corporations' plants.

The committee reported that 45,248 men were working 12 hours a day, and made very little of the plea that many of these men are not incessantly at work. It went on to state that the question should be considered from a social as well as a physical point of view.

The fact that stands out most strikingly in any study of the labor conditions in the iron and steel indus-

try in the United States is the unusually long schedule of working hours to which the larger number of the employees are subject. The federal Bureau of Labor has issued a report showing that during May, 1910, 50,000, or 29 per cent., of the 173,000 employees of blast furnaces and steel works and rolling mills covered by this report customarily worked seven days per week, and 20 per cent. of them worked 84 hours or more per week, which, in effect, means a 12-hour working day every day in the week, including Sunday. The evil of seven-day work was particularly accentuated by the fact developed in the investigation that the seven-day working week was not confined to the blast-furnace department, where there is a metallurgical necessity for continuous operation, and in which department 88 per cent. of the employees worked seven days a week; but it was also found that, to a considerable extent, in other departments, where no such metallurgical necessity can be claimed, productive work was carried on on Sunday just as on other days of the week. For example, in some establishments the Bessemer converters, the open-hearth furnaces, and the blooming, rail, and structural mills were found operating seven days a week for commercial reasons only.

The United States Steel Corporation in April decided upon a policy of reducing the 12-hour day which was then the rule for over one-half its mill workers. Later in the month one of the largest competitors of the Steel Corporation, the Cambria Steel Company, went a step further and announced an eight-hour schedule for the continuous operation of its blast furnaces.

WELFARE WORK

International Harvester Co.—This company, in addition to its pension and accident funds and its employees' benefit association, is now undertaking a crusade against tuberculosis. It has a doctor and a nurse on its payroll, who are endeavoring to discover cases of tuberculosis among the employees. These are cared for at their homes if possible, or given light out-

door work where the disease is not far advanced. For cases requiring further attention, the company has erected a ten-bed building at the Edward Sanatorium, Naperville, Ill.

United States Steel Corporation.—When Mr. Carnegie sold out to the Steel Corporation his first act was to set aside a fund of \$4,000,000 for the purpose of providing pensions for the employees of the Carnegie Steel Co. In 1910 the United States Steel Corporation added \$8,000,000 to this fund and from the \$12,000,000 fund thus established pensions are granted to superannuated workmen in all of the plants of the corporation. The fund was definitely established Jan. 1, 1911, with 1,152 beneficiaries. There were added during the year 565 new names, but 111 cases were discontinued, leaving 1,606 names upon the pension list on Dec. 31, 1911. Of those added during 1911 the average age was 66.7 years; the average service was 40.3 years, and the average monthly pension was \$20.75.

Western Union Telegraph Company.—A pension plan was announced, applicable to employees who have been 20 years or more in the service. The amount of pension will depend upon the average salary received by the employee for the 10 years preceding retirement and also upon the number of years of service, the amount increasing progressively after 25 years. The minimum is \$25 and the maximum \$100 a month.

Brewery Compensation Plan Rejected.—The compensation plan that had been worked out with great care by a joint committee of the United States Brewers' Association and the International Brewery Workmen's Union was submitted to members of the association and of the union for ratification and was rejected by the unions by an overwhelming vote of 22,936 to 12,888. The opponents based their objections on the theory that such a plan would tend to weaken and disorganize the unions by impairing their fighting character.

Massachusetts Homestead Commission.—Following the instructions of the legislature of 1911, the Commission drew up a bill and presented it to the legislature in 1912, "embodying a plan and the method of carry-

ing it out, whereby, with the assistance of the Commonwealth, homesteads or small houses may be acquired by mechanics, factory employees, laborers, and others in the suburbs of cities and towns." This bill provided that the Massachusetts Homestead Commission be allowed to borrow funds for its work from the funds deposited in the treasury of the Commonwealth in accordance with Ch. 590 of the Acts of 1908, consisting of certain amounts uncalled for in the savings banks. The legislature asked the opinion of the justices of the Supreme Judicial Court concerning the constitutionality of the bill. The justices answered in the negative, on the ground that funds raised by public taxation cannot be used for private purposes. This decision left the Commission, which had been created as a permanent body, without any ostensible functions to perform under the statute, but the legislature agreed to its continuance by appropriating a nominal sum to its use and authorizing it to prosecute its inquiries still further.

SCIENTIFIC MANAGEMENT

A special committee of the House of Representatives appointed to investigate the Taylor and other systems of shop management confined its attention almost wholly to the Taylor system, principally because this plan has been introduced already in certain Government works. The scope of the inquiry included the applicability of scientific management to Government works, its effect on the health and wages of employees, and its effect on costs of production.

The committee recommended: That wherever possible, in Government work the machines, tools, nuts, and bolts should be standardized, the management using continuous care that the cost of standardization shall not exceed the benefits to be derived; that the management should at all times give studious attention to the proper systematizing and routing of work, the grouping of machines, the furnishing of proper tools and equipment, and the elimination of waste motion and waste energy on the part of the workmen; and that careful study should be made of machines in order to attain the speed and feed which will secure the highest and best possible production on each class of work.

It was further recommended that the management should put forth every effort to invite and induce full cooperation between the working force and themselves. Stop-watch time study should not be made of workmen without their consent or any conditions be imposed upon them by authority which imply any indignity; piecework may be introduced where the work to be performed is a continuous duplication, but with the express understanding that piecework rates shall not be cut unless the conditions of production are materially changed; in other cases the rate should be a straight day-wage rate at the highest prevailing rate for a similar class of work in the neighborhood where the Government work is to be performed, except that by mutual consent bonus and premium work may be introduced. (See also XXIII, *Industrial Management*.)

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LABOR LEGISLATION

IRENE OSGOOD ANDREWS

ACCIDENTS AND DISEASES

Reporting.—The movement for compulsory, uniform reports of industrial accidents and diseases, as a basis for investigation, for the classification of dangerous trades, and for preventive legislation, made distinct progress during the year. Seven states enacted new or strengthened old laws relating to the reporting of accidents. In Massachusetts and New Jersey, laws passed in 1912 require all employers to report serious accidents to employees while at work. The New Jersey law requires casualty companies also to report accidents to the commissioner of labor. In California all employers, except those engaged in agriculture and employers of domestic labor, must make complete reports of accidents which result in death or disability lasting one week or more. Employers' liability insurance companies also must report monthly to the industrial-accident board all injuries to employees reported to them, claims for damages filed, and settlements or compromises made. In Rhode Island public utilities must report serious accidents, whether to employees or to patrons; in Virginia coal-mine accidents must be reported; in Arizona reports are required of mine accidents and of accidents on public utilities; and in New Mexico fatal accidents in mines must be reported at once by telegraph or telephone.

Two new states, Maryland and New Jersey, are added to the list of six states (California, Connecticut, Illinois, Michigan, New York, Wisconsin) which last year required physicians to report cases of certain occupational diseases. All of these eight laws require reports of all cases of industrial poisoning from lead, phosphorus, arsenic or mercury, or their compounds, or of anthrax, or compressed-air illness. The Maryland law of 1912 requires physicians to report in addition all diseases contracted as a result of the employment.

Prevention: Factories and Workshops.—Perhaps the most notable

achievement of the year in legislation for the prevention of diseases in factories and workshops was the passage by Congress of the act placing a prohibitive tax upon the manufacture, and forbidding the importation, exportation, and sale, of matches made with poisonous white phosphorus. This removes the common cause of phosphorus necrosis of the jaw bones. The administration of the act is in the hands of the Commissioner of Internal Revenue, and heavy penalties are imposed for violations. (See also XIV, *Public Finance*.)

In Massachusetts, the act relating to the safeguarding of machinery is extended to cover elevators and all machinery having movable parts, and to include mechanical establishments, workshops and mercantile establishments.

The New Jersey law relating to the ventilation of manufacturing establishments is strengthened by providing that excessive heat, steam, gases, vapors, dust or other injurious impurities must be rendered "harmless, so far as is practicable." The commissioner of labor may order fans or other mechanical means of removal. In manufacturing establishments, where machinery is used, friction clutches for stopping shafting, as well as belt shifters, must be provided; power presses and foot presses must be properly guarded. The commissioner of labor may order that any portion of a building, shall be properly lighted. The law relating to bakeries is entirely rewritten and is extended to confectionery establishments.

New York made several additions to the factory law. Among the more important are the following: Washing facilities, including hot water and individual towels, must be provided in factories where lead, arsenic or other poisonous substances or injurious fumes, dust or gases are present; employees are forbidden to take food into any room where poisonous substances or injurious fumes, dust or gases are present in harmful conditions or quantities, and suitable

provision for eating must be maintained elsewhere. In factories in which more than 25 persons are regularly employed above the ground floor, fire drills must be conducted at least once every three months. In factory buildings over seven stories or 90 ft. high, in which more than 200 persons are regularly employed above that height, and in which wooden flooring or wooden trim is used, approved automatic sprinkling systems must be installed by the owner. All factories must be provided with properly covered, fire-proof receptacles in which inflammable waste materials must be deposited. Such materials must be removed from the floors not less than twice a day, and must be entirely removed from a factory building at least once a day. Gas jets or lights in factories must be enclosed by globes, wire cages or other "proper protection." Smoking in a factory is prohibited.

The Virginia law requiring separate toilets for each sex was strengthened and extended to mercantile establishments.

Mines.—Again this year we find in the mining states considerable activity aimed at the prevention of accidents and diseases. Arizona, New Mexico and Virginia enacted elaborate and detailed mine safety laws; special attention is given to ventilation, storage and handling of explosives, and to the construction of shafts, roadways, etc. Maryland appropriated \$25,000 for a hospital for sick and injured miners.

Railroads.—The laws relating to railroads enacted this year refer mainly to the protection of the traveling public. But in Arizona the number of cars which may make up a train, the number of men to be employed, and the amount of previous experience necessary, are carefully regulated. (See XXII, *Trade, Transportation, and Communication*.) The Corporation Commission may prescribe rules and require specified safety devices for the protection of workmen. In Mississippi street-cars operated in winter must be equipped with heated vestibules for the use of employees. Congress has provided that by July 1, 1917, all postal cars

must be constructed of steel or some equally indestructible material.

Miscellaneous.—In Massachusetts passenger elevators must be equipped with suitable seats for operators; in New York, the 1909 law regulating work in compressed air was amended in several technical details which will probably weaken the law from the point of view of the safety of employees.

ADMINISTRATION OF LABOR LAWS

Massachusetts State Board of Labor.—The most important administrative measure of the year was the act creating the state board of labor and industries in Massachusetts. This board of five persons takes over the enforcement of practically all the labor laws of the state (except boiler inspection), including those formerly enforced by the district police and by the state board of health. The board is composed of five persons, one an employer, one a wage-earner, one a physician or a sanitary engineer, and at least one a woman. The members are appointed by the governor for five-year terms, so arranged that the term of one member shall expire each year. The chairman receives \$1,500 and the other members \$1,000 a year. The board appoints and may remove the commissioner of labor, whose term of office and salary (not less than \$5,000 nor more than \$7,500) it determines. The law also authorizes the appointment of two deputy commissioners, 24 inspectors and clerical assistants, at least four of whom must be women, and all of whom (with certain exceptions as to existing inspectors) are subject to the civil-service laws.

Factory Inspection.—Provision is made in Illinois and Kentucky for two women factory inspectors; and in Maryland for three women inspectors who are to enforce the new ten-hour law for women. Maryland has also increased the number of child-labor inspectors from six to eight, and has provided for the employment of a physician. In New Jersey two additional inspectors are authorized, one, a practical, skilled baker; the

other, a practical, skilled metal polisher and buffer; the salary of the commissioner of labor is raised from \$3,500 to \$6,000 a year. All members of the Department except the commissioner are placed under the civil-service law.

New York.—The number of factory inspectors in New York is increased from 85 to 125, and the maximum number of women inspectors is raised from 15 to 20. The owner of every factory must register his factory with the state department of labor, giving any data required by the commissioner of labor. Whenever the location of a factory is changed, the new address must be reported within 30 days. The commissioner of labor may affix labels containing the word "unclean" to articles which have been exposed to contagious disease, found in any factory. The number of special investigators for the work of the bureau of industries and immigration is increased, and the powers of the commissioner of labor to inspect labor camps, employment agencies and immigrant lodging places, are greatly enlarged. The term of the factory investigating commission, created in 1911, is extended another year, and \$60,000 is appropriated for its use.

In South Carolina, the commissioner of agriculture, commerce and industries is to be elected, instead of appointed, and in Arizona, New Mexico and Virginia offices of state mine inspectors are created with detailed provision as to enforcement of the new mine safety laws.

CHILD LABOR

General Tendencies.—Most of the provisions of the uniform child-labor law were enacted in Arizona and Maryland, and Minnesota, by adding many features to previous legislation, brought her law nearly to the standard of the uniform law. Though Louisiana took a backward step in readmitting children to the stage, the general tendency is distinctly toward raising and extending to new occupations, the minimum age limit, toward the shortening of hours and the prohibition of night work for children.

Arizona.—In Arizona, no child under 14 years may be "employed, permitted or suffered" to work in a list of establishments covering practically every occupation. Children under 16 are excluded from a long list of dangerous occupations, and the state board of health is given power to add to the list and to prohibit employment in such trades or occupations. The same power is given the board of health with reference to excluding children under 18 from a list of extra-hazardous occupations. Sixteen is the minimum age for mines and quarries; smelters and ore reduction works are mentioned in both lists. The minimum age for street trades in cities of the first and second classes is ten for boys and 16 for girls.

In incorporated cities and towns night work, from 10 p. m. to 5 a. m., is forbidden for messengers under the age of 21, in telegraph or messenger companies. Boys under 16 and girls under 18 may not work at any gainful occupation, except domestic service or farm labor, more than eight hours a day or 48 hours a week, nor between 7 p. m. and 7 a. m. Detailed provisions as to schooling, certificates and permits, penalties and general enforcement are carefully outlined.

Kentucky.—In Kentucky, no female under 21 may be "employed or suffered or permitted" to work at any gainful occupation (except domestic service and nursing) for more than ten hours in any one day, or 60 hours in a week; and in Louisiana, no child under 16 may be employed in any theatrical exhibition or as a musician in any concert unless a permit has first been obtained from the judge of a juvenile court. No child under 17 years of age may enter or be employed in any place where billiards or pool games are played.

Maryland.—In Maryland, the age limit is raised from 12 to 14 years in most occupations, but remains 12 for work in canning and packing establishments, stores, offices, boarding houses, places of amusement and clubs, and in the distribution, transmission and sale of merchandise; except that children under 14 may not work during school hours unless they have fulfilled the legal require-

ments as to school attendance. Children under 16 are forbidden to work in a long list of dangerous and unhealthful occupations, including theaters or concert halls, except, in the latter, on permits issued for a two-week period. Children under 18 may not work in a list of certain other extra-dangerous or harmful occupations, and no female under 18 may work at an employment which compels her to stand constantly. No minor under 21 may work in or about a saloon or barroom. In cities of 20,000 population or over, the night work of messenger boys under 18 years, is forbidden between 10 p. m. and 6 a. m.; street trades, and all provisions for the administration of the act are regulated in great detail.

Massachusetts.—In Massachusetts, if any woman or child be employed in more than one manufacturing or mercantile establishment, the total number of hours shall not exceed 54 a week.

Minnesota.—In Minnesota, the child-labor law is extended to employment in the construction of buildings or about engineering works, and has now practically reached the standard of the uniform child-labor law. To obtain an employment certificate a child must now have a physician's certificate of physical fitness for the work, and the educational requirements are materially raised; children under 16 may appear in concerts or theatrical exhibitions only after compliance with certain stated regulations. Night work, between 7 p. m. and 7 a. m., is forbidden for all children, and between 9 p. m. and 5 a. m. for messenger boys under 18; and no girl under 21 may at any time be employed as a messenger by a telegraph, telephone or messenger company.

Mississippi.—In Mississippi, the child-labor law is extended to canneries (except those for fruit), the minimum age for girls is raised so that employment is forbidden under 14 years, and hours are limited for those under 18 years, and the maximum number of hours for both boys and girls is decreased from ten to eight a day, and from 58 to 48 a week.

New Jersey.—In New Jersey, the minimum age below which night work is prohibited from 7 p. m. to 7 a. m. in certain establishments, is lowered from 18 to 16, but the provisions of the act are extended to cover bakery and confectionery establishments.

New York.—An important step was taken in New York by requiring, before an employment certificate is issued, a certificate of physical fitness to be granted by a medical officer of the department or board of health, after making a thorough physical examination. The hours of labor of boys under 18, and of girls under 21 in factories, are reduced from 60 to 54 a week, but the law does not apply to canning or preserving perishable products between June 15 and Oct. 15 of each year.

Rhode Island.—In Rhode Island, night work, from 10 p. m. to 5 a. m., is forbidden for messengers under 21 years of age, and in South Carolina, in cities of 5,000 population or over, children under 14 may not be "employed, permitted or suffered to work" as messengers for telegraph, telephone or messenger companies; and night work, from 10 p. m. to 5 a. m., is forbidden for messengers under 18.

Virginia.—In Virginia, no boy under 14 and no female may be permitted to work in a coal mine. The ten-hour law for factories and manufacturing establishments where children under 14 are employed is extended to cover workshops and mercantile establishments, but exceptions are made of establishments engaged exclusively in packing fruits and vegetables from July 1 to Nov. 1, of mercantile establishments in towns of less than 2,000 inhabitants, and of mercantile establishments on Saturdays.

The Children's Bureau.—The federal Children's Bureau is directed to investigate and report upon all matters pertaining to the welfare of children and child life, and especially, among other questions, the employment of children, their accidents and diseases, dangerous occupations, and all state and territorial legislation affecting children. (See also XVIII, *Prevention, Correction, and Charity.*)

COMMISSION ON INDUSTRIAL RELATIONS

A federal Commission on Industrial Relations has been created, composed of nine persons, including at least three employers and three representatives of organized labor. The members are appointed by the President, and are paid traveling and other necessary expenses and \$10 a day while actually engaged in the work. The commission is given wide powers in the matter of holding public hearings and compelling testimony. The term of the commission is three years and \$100,000 is appropriated until June 30, 1913. Experts may be paid a maximum of \$5,000, but no other person except temporary stenographers may be paid at a rate of over \$3,000 a year. At least one report must be made to Congress within the first year, one within the second year, and a final report not later than three years after the approval of the Act, Aug. 23, 1912. The Department of Commerce and Labor is authorized to cooperate with the commission.

The main duties of the commission are, to inquire into the general condition of labor in the principal industries of the United States, including agriculture, and especially into those which are carried on in corporate forms; into existing relations between employers and employees; into the effect of industrial conditions on public welfare and the rights and powers of the community to deal therewith; into conditions of sanitation and safety for employees and the provisions for protecting the life, limb, and health of the workers; into the growth of associations of employers' and wage earners, and the effect of such associations upon the relations between employers and employees; into the extent and results of methods of collective bargaining; into any methods which have been tried in any state or in foreign countries for maintaining mutually satisfactory relations between employees and employers; into methods for avoiding or adjusting labor disputes through peaceful and conciliatory mediation and negotiations; into the scope, methods, and resources of

existing bureaus of labor and into possible ways of increasing their usefulness; into the question of smuggling or other illegal entry of Asiatics into the United States or its insular possessions, and of the methods by which such Asiatics gain admission; the commission is required to make recommendations to prevent such smuggling and illegal entry. "The Commission shall seek to discover the underlying causes of dissatisfaction in the industrial situation and report its conclusions thereon."

The members of the commission, nominated by President Taft on Dec. 17, are: Senator George Sutherland of Utah; George B. Chandler, a member of the Connecticut legislature, and Charles Simon Barrett of Georgia, president of the Farmers' Union, representing the people; Frederick A. Delano of Chicago, formerly president of the Wabash Railroad; Adolph Lewisohn of New York, copper mine owner and philanthropist, and F. C. Schwedtman of Missouri, an electrical engineer, representing capital; and Austin B. Garretson of Iowa, president of the Order of Railway Conductors; John B. Lennon, treasurer of the American Federation of Labor, and James O'Connell of the District of Columbia, vice-president of the same organization, representing labor.

EMPLOYERS' LIABILITY AND WORKMEN'S COMPENSATION

The legislation of 1912 upon the subject of employers' liability and workmen's compensation may be most conveniently divided into three groups: general liability laws, acts regulating employers' liability insurance companies, and compensation acts and amendments. Compensation laws were enacted in Arizona, Maryland, Michigan, and Rhode Island, which raises the total number of states having such laws to 15. The Maryland law is purely voluntary; those of Michigan and Rhode Island are elective, with the provision for bringing pressure to bear upon the employer by cutting off his defenses in case of non-election, a device used in several states. The Arizona act appears to be a workmen's compul-

sory-compensation law. The bill drawn up in accordance with the recommendations of the federal commission failed of passage in Congress.

General Liability Laws: Arizona.

—In Arizona, in accordance with the provision of the constitution, an employers' liability law is enacted which establishes a list of "dangerous occupations." In case of accident arising out of and in the course of the employments specified, and not caused by the negligence of the employee, the employer is liable in damages; the questions of contributory negligence and assumption of risk being left to the jury as questions of fact. If the employer appeals from the decision of a lower court, and the judgment for the employee is sustained, the employer must not only pay the damages, but must pay interest at the rate of 12 per cent. per annum on the amount of the judgment from the date when the suit was first filed, until the full amount is paid. Contracting out is not permitted. Action must be begun within two years.

The list of occupations declared to be especially dangerous, includes substantially all railroad and street-railway work; all work necessitating dangerous proximity to any explosive or to compressed air; iron or steel bridge building; the running of elevators and of derricks or other hoisting apparatus; work on ladders or scaffolds more than 20 ft. above the ground or the floor beneath; electrical work; work in mines, quarries, open pits or cuts, ore-reduction works and smelters; the construction and repair of tunnels, subways, and viaducts; and all work in places where steam, electricity, or any other mechanical power is used to operate machinery. Employers must inform employees in such occupations, by rules, regulations or instructions, "as to the duties and restrictions of their employment." Railroads in Arizona are forbidden to maintain or assist relief associations whereby the employees directly or indirectly waive their right to damages in case of injury or death.

Massachusetts.—In Massachusetts practically any form of a written notification of an accident, or a signed communication giving the time, place,

and cause of the injury or death is now sufficient. The maximum amount of damages which may be recovered in case of the death of an employee of a railroad corporation is raised from \$5,000 to \$10,000. Railroad companies may issue non-transferable passes to former employees who have been injured in their service.

Mississippi.—The Mississippi law providing that proof of injury is evidence of want of care on the part of railroad companies is extended to all other companies which use engines, locomotives or cars propelled by steam, electricity, gas, gasoline or lever power and running on tracks, and the company is declared to be directly responsible.

Virginia.—In Virginia railroad corporations are made liable in damages for injuries resulting from acts of a co-employee, not only on another, but also on the same train, and on or about an engine, even if the party injured had the right to direct the services of the co-employee. The provisions of the acts are restricted in their application so as not to conflict with any provision of the Constitution or laws of the United States.

New Jersey.—Actions against a railroad company, in New Jersey must be brought within two years after the death of the injured person.

Employers' Liability Insurance Companies.

—Insurance companies in Illinois desiring to transact accident-insurance business must become legally incorporated, except by permission of the insurance superintendent. The members of such mutual insurance companies need no longer be engaged in the same class of manufacturing or mining. Mutual insurance companies in Massachusetts which were transacting employers' liability business before April 6, 1911, may, if authorized by a two-thirds vote of the policy holders present at a meeting called for the purpose, exercise the same rights and powers as companies organized under the workmen's compensation act of 1911.

In Michigan, the formation of mutual insurance companies by employers, who have elected to come under the employers' liability and work-

men's compensation law is authorized, subject to the approval of the industrial accident board. The board may limit the membership of a company to employers engaged in industries of the same general character or in which the risks are similar in nature and extent. The formation and management of such companies is regulated in detail, and it is especially provided that the board of direction of a company may make and enforce reasonable rules and regulations for the prevention of injuries on the premises of its members. Members who neglect to provide suitable safety appliances as provided by law or as required by the board of directors may be expelled, but they have the right of appeal to the industrial-accident board.

Employers' liability insurance companies in Virginia must include in their annual statements more detailed information in regard to premiums, payments on account of injuries, number of suits being defended, and other items intended to show the results of their experience in the business.

Compensation Acts and Amendments: Maryland.—The act of Maryland is purely permissive, making it lawful for employer and employee to agree upon a scheme of compensation, the details of which are laid down in the act, whereupon the employer becomes relieved of the common-law liability for injuries. The experience of Massachusetts and New York, where such laws have been on the statute books for several years, goes to show that a voluntary law of this type may be expected to remain a dead letter. The law of 1910 in regard to the miners' and operators' cooperative relief fund of Allegany and Garrett counties is amended so as to increase the tax upon operators and employees in Garrett county from 27 to 38 cents a month, leaving the tax in Allegany county 27 cents a month as before.

Arizona.—The Arizona law was enacted in obedience to a mandate of the constitution which required the legislature to enact a compulsory compensation law applicable to workmen engaged in manual or mechanical labor in a list of especially

hazardous employments. Compensation must be given for accidents arising out of and in course of the employment and due to a necessary or inherent risk thereof or to a failure of the employer to exercise due care or to comply with the laws. In case of death the employee may receive 2,400 times his half-weekly wages. In case of total disability he receives 50 per cent. of his semi-monthly earnings during incapacity. For partial disability he receives 50 per cent. of semi-monthly loss of earnings during incapacity. In all cases, \$4,000 is a maximum. An injury must incapacitate for at least two weeks, when compensation reverts to first day of disability. Disputes may be settled by voluntary agreement, arbitration or the courts in the usual manner.

This Arizona law, while purporting to be compulsory, contains a provision which appears to make it optional with the employer, as well as with the employee, whether he will go under the compensation law or be sued under the employers' liability law.

Michigan and Rhode Island.—The acts of Michigan and Rhode Island are similar to those of 1911 in other states. They cover all employments with specified exceptions: Michigan excepts household, domestic and farm labor, and Rhode Island excepts domestic and agricultural labor and all employers employing not more than five persons. Michigan includes the state and its subdivisions, and expressly extends protection to aliens; Rhode Island confines the application of its law to employees receiving not more than \$1,800 a year. Both acts speak of injuries arising out of and in the course of employment, following the phraseology of the English law. Both acts allow, in case of death, 300 times the half-weekly wages (if no dependents, \$200); in case of total disability, 50 per cent. of weekly wages for 500 weeks, or, in Michigan, a maximum limit of \$4,000; the minimum weekly payment is \$4, the maximum, \$10. In case of partial disability both acts allow 50 per cent. of the weekly wage loss for 300 weeks, with a weekly maximum of \$10. In accordance with the

prevailing custom, injuries resulting in disability lasting less than two weeks do not entitle to compensation. In case of other injuries compensation (except in Michigan, if the disability continues for eight weeks or longer) is paid only from the fifteenth day, subject to the usual provisions, for the payment of medical and hospital expenses.

California.—The industrial accident board of California is directed to compile statistics in regard to the causes and prevention of industrial accidents, and the comparative merits and relative cost of the various forms of liability insurance and workmen's compensation. Employers and liability insurance companies must furnish the board, on written request, with any information under their control. The board is directed to report the results of its investigations no later than Feb. 1, 1913.

Massachusetts.—The Massachusetts Workmen's Compensation Act of 1911 is amended in many details, relating primarily to injuries for which extra compensation must be paid, to the right to defend claims for double compensation, notification of injuries, the form of claims, the time limit for making claims, the duties of arbitration committees, and to the review of claims and appeals. The number of members of the industrial accident board is increased from three to five; and their terms of office are reduced from six to five years, and salaries are also reduced.

New Jersey.—The New Jersey act was also amended to require copies of judges' orders to be filed with the commissioner of labor.

New York.—A concurrent resolution was adopted in New York which proposes an amendment to the constitution allowing the passage of a compulsory compensation act:

Nothing contained in this constitution shall be construed to limit the power of the legislature to enact laws for the protection of the lives, health, or safety of employees; or for the payment, either by employers or by employers and employees or otherwise, either directly or through a state or other system of insurance or otherwise, of compensation for injuries to employees, or for death of employees resulting from such injuries, without regard to fault as a

cause thereof, except where the injury is occasioned by the wilful intention of the injured employee to bring about the injury or death of himself or of another, or where the injury results solely from the intoxication of the injured employee while on duty; or for the adjustment, determination and settlement, with or without trial by jury, of issues which may arise under such legislation; or to provide that the right of such compensation and the remedy therefor shall be exclusive of all other rights and remedies for injuries to employees or for death resulting from such injuries; or to provide that the amount of such compensation for death shall not exceed a fixed or determinable sum, provided that all moneys paid by an employer to his employees or their legal representatives, by reason of the enactment of any of the laws herein authorized, shall be held to be a proper charge in the cost of operating the business of the employer.

The charter of Greater New York provides for a 30-day leave of absence for injured day laborers, with pay during disability.

The Federal Act.—The provisions of the federal Workmen's Compensation Act of 1908 are extended to artisans, laborers, and other employees, who are engaged in hazardous work under the Bureau of Mines and the Forestry Service. (See also XIV, *Property and Casualty Insurance*.)

HOURS OF LABOR

Public Employment: the Federal Service.—The eight-hour law of the federal Government is extended to all contracts or sub-contracts, which involve the employment of labor made by or on behalf of the United States, any territory or the District of Columbia. A penalty of \$5 for each laborer or mechanic and for every calendar day is imposed for any overtime that may be "required or permitted." The act does not apply to contracts for transportation by land or water, for the transmission of intelligence, for the purchase of supplies, for materials and articles that can usually be bought in open market (except armor and armor plate), to the construction or repair of levees or other works necessary for protection against floods and overflows. Under certain extraordinary condi-

tions the President may declare a violation of the eight-hour clause to have been excusable; and in time of war or when war is imminent, he may by executive order, waive the provisions of the act as to any specific contract; and he may waive them as to any Panama Canal contract until Jan. 1, 1915. Ammunition for the army and navy must be purchased from persons, firms, or corporations which have established an eight-hour workday.

After March 4, 1913, letter carriers in the city delivery service and clerks in first and second-class post offices will be given an eight-hour day which must not extend over a longer period than ten consecutive hours. In case of emergency longer hours are permitted but extra compensation must be paid, and for all Sunday work compensatory time must be allowed within the next week. Post offices of the first and second classes are no longer open on Sunday for delivering mail, except special-delivery letters.

Arizona has established the eight-hour day for all employees of the state or of any of its political subdivisions, except in cases of extraordinary emergency in time of war, or for the protection of property or human life. The act applies to all contract work as well as to direct employees, and a penalty of from \$50 to \$1,000, or imprisonment for not more than six months, or both, is imposed upon any contractor who may "require or permit" laborers to work more than eight hours. Existing contracts are exempt.

Massachusetts.—In Massachusetts, weekly half holidays during June, July, August, and September must be given, with pay, to laborers and mechanics in the permanent service of the metropolitan water and sewerage board and the metropolitan park commission (with certain exceptions). If practicable, the half holiday must be on Saturday. But if the public service requires, enough days off duty may be given at any time during the year to equal in time these weekly half holidays.

Private Employment: Arizona.—The eight-hour day in Arizona, which formerly was applied to underground

mines and underground workings, has been extended to all open-cut workings and open-pit workings, including the time going from and returning to the surface, and to the operation of smelters, reduction works, stamp mills, concentrating mills, chlorination processes, cyanide processes, cement works, rolling mills, rod mills, coke ovens and blast furnaces. Another act extends the eight-hour day to employees of electric light and power plants.

Massachusetts.—The Massachusetts law regulating the hours of work of conductors and motormen is extended to include trainmen, and provides for not more than nine and one-half hours' platform work to be performed (on regular cars) within 12 hours; for extra men, not less than eight hours must be given between the end of one day's work and the beginning of the next. Emergencies are provided for, with extra pay for extra labor. The act goes into effect Jan. 1, 1913.

Mississippi makes it unlawful for persons, firms or corporations engaged in manufacturing or repairing "to work their employees more than ten hours per day except in cases of emergency, or where public necessity requires." The law is not worded to insure enforcement, but it is a recognition of the need of a shorter work day.

New Jersey has taken a progressive step in establishing the 60-hour week and 10-hour day, for all employees in bakery and confectionery establishments. The law is weakened by permitting an additional two hours a day in emergencies. It is especially stated that if any section or provision of the act shall be questioned and held unconstitutional, the decision shall not affect any other section or provision. In view of the earlier New York decision declaring hour limitations for men in bakeries, unconstitutional, the operation of this law will be watched with great interest.

New Mexico has enacted a law similar to those in several other states which limit the hours of railroad employees to sixteen, with a rest period of eight or ten hours between runs.

IMMIGRATION

Aliens who have not become or declared their intention of becoming citizens of the United States may not be employed in Arizona by the state, by the counties, or by municipalities; the only exception is prison labor.

The commissioner of labor in New York is authorized to cooperate with the commissioner of education and other school officers to ascertain the necessity for and the extent to which instruction should be imparted to aliens within the state, to devise methods for the proper instruction of aliens, not only in the English language, but in other subjects, and to establish and supervise classes for aliens. The provisions in regard to the licensing and regulation of immigrant lodging places now apply to all such places, except those maintained by charitable associations or religious societies.

OLD-AGE PENSIONS

The movement for old-age pensions for employees of private industries made little progress during the year, though a joint resolution of the Maryland legislature urged the appointment of a federal commission to investigate the subject. The Massachusetts and New Jersey retirement systems for public employees were extended, but no states enacted new legislation establishing systems of this character.

The Massachusetts act of 1911, establishing a retirement system for employees of the commonwealth, is amended in many important details. A new law authorizes cities and towns, other than Boston, to retire and pension laborers, who have been in their employ for not less than 25 years, have attained the age of 60, and have become physically or mentally incapacitated for labor; and also to pension laborers who have been in their employ for not less than 15 years and have become physically or mentally incapacitated for labor. They must retire and pension laborers who have been in their employ for 25 years and have attained the age of 65 years.

TRADE UNIONS AND TRADE DISPUTES

Post Office Employees.—The fight of the United States Post Office employees for the right to organize without being in danger of demotion or dismissal from the service resulted in a half-victory by which organization is permitted but affiliation with any central trade union is practically forbidden. The law is included in the Post Office Appropriation Act, and provides that membership in an organization of postal employees having for its object improvements in the condition of labor of its members including hours, wages, and leave of absence, shall not be a cause for reduction in rank or removal from the postal service; provided the organization is "not affiliated with any outside organization imposing an obligation or duty upon them to engage in any strike, or proposing to assist them in any strike, against the United States." It is also provided that postal employees may not be penalized for presenting their grievances to members of Congress, and that the fight "of persons employed in the civil service of the United States" to petition Congress or any member of Congress or to furnish information to Congress "shall not be denied or interfered with." This act also provides that the periodical publications of trades unions may be admitted to the mails as second-class matter. (See also *V. Civil Service.*)

Blacklisting, which is defined to include any attempt to prevent, by word, sign or writing of any kind, a discharged employee from getting work, is forbidden in Arizona and in New Mexico.

Employment of Strike Breakers.—Under an earlier Massachusetts law an employer who advertised for employees to fill the place of strikers was obliged to state that such labor disturbance existed. Under the new law these provisions cease to be operative after the state board of conciliation and arbitration has determined that the business of the employer is being carried on in the normal and usual manner and extent.

UNEMPLOYMENT

In Mississippi, emigrant or employment agents who solicit laborers to go beyond the limits of the state must pay an annual license of \$500.

In New York, when the license of an employment agency has been revoked, the mayor or commissioner of licenses may now issue another license to the same person after the expiration of three years. Formerly a person whose license had been revoked could never obtain another.

In South Carolina, employers who require notice of quitting work must, in turn, notify their employees of shutdowns by posting in every room a printed notice stating the date of beginning the shutdown and its approximate length. These notices must be posted at least two weeks before the shutdown, or for the same time that is required of employees before quitting. Shutdowns caused by some unforeseen accident to machinery or "by some act of God or of the public enemy" are excepted. In addition to the penalty (maximum, \$5,000), employers are liable to each one of their employees for damages suffered by the failure to give notice.

WAGES

New Jersey enacted an important law reducing the amount of court fees in suits for wages when the amount demanded is less than \$20. The assignment of wages was regulated in Kentucky; mechanics' lien laws were amended in that state, in Mississippi, and in New Jersey. The latter state has also appointed a commission to revise the mechanics' lien laws. Payments in lawful money were required twice a month in most employments in Virginia, and once a month in Mississippi, except that 15 days' wages earned immediately before the regular pay-day may be held back. In Arizona companies and corporations were required to pay wages bi-monthly, in lawful money or negotiable bank checks payable on demand, and payments must be in full, except that wages for not more than five days' labor may be withheld. In a number of states the wages of public employees was increased.

WOMAN'S WORK

Massachusetts.—For the first time in this country we are to experiment with minimum-wage legislation. Massachusetts, the pioneer in this field, has established a commission to provide for the determination of minimum wages for women and children. It will consist of three members, one of whom may be a woman, appointed by the governor for terms of three years, with the term of one member expiring each year. Commissioners receive \$10 for each day's service, with expenses, and the appointment of a secretary is authorized. The commission may establish a wage board for any occupation where it finds wages inadequate to maintain a female in a healthful condition (see *Labor, supra*). The commission may approve or disapprove any or all of the recommendations or may recommend the subject to the same or to a new wage board. If the commission approve any or all the recommendations it must give a public hearing, after 14 days' notice, to employers paying less than the approved minimum, and, if it then finally approve, must enter a decree of its findings, noting in the decree the names of employers who fail or refuse to accept the minimum wage. Within the next 14 days these names, with a statement of the findings of the commission and of the minimum wages paid by each employer, must be published, in type no smaller than that of news matter and attested by the names of a majority of the commission, in at least four newspapers in each county. But an employer may obtain a stay of execution by filing a declaration under oath in the supreme judicial or superior court that compliance with the decree would be likely to endanger the prosperity of the business, and this court, if it finds his declaration true, must issue an order revoking the decree. Provision is also made for appeals and rehearings. There is no penalty except publicity for failure to pay the minimum wages, but the commission must determine from time to time whether employers are obeying its decree, and must republish the names of those who are not.

The state board of health in Massachusetts is directed to investigate core rooms where women are employed and to make rules relating to the structure and location of such rooms, the emission of gases and fumes from ovens, and the size and weight of materials which women may be allowed to lift or work on. Women must be permitted to use seats while at work, as well as when they are not actively employed, except when the work cannot properly be performed in a sitting position. If any women or children be employed in more than one manufacturing or mercantile establishment the total number of hours shall not exceed 54 a week.

Arizona.—In Arizona women may not be "employed, permitted, or suffered to work" in any occupation which requires them to remain standing constantly, or in or about any mine, quarry, or coal breaker. Seats must be provided for women employees.

Colorado.—On Nov. 5 the people of Colorado approved an act limiting the hours of labor for females in manufacturing, mechanical and mercantile establishments and in laundries, hotels and restaurants, to eight in one day.

Kentucky.—No female in Kentucky may work more than ten hours a day, and 60 a week in laundries, bakeries, factories, workshops, stores, hotels, restaurants, telephone exchanges, telegraph offices, mercantile, manufacturing or mechanical establishments. Employers must keep time books which must be open to inspection by the state labor inspector. Seats for females must be provided, and in stores and mercantile establishments at least one seat must be furnished for every three females employed.

Maryland.—In Maryland no female may be "employed or permitted to work" in any manufacturing, mechanical or mercantile establishment, printing office, bakery or laundry more than ten hours a day or 60 hours a week. If any part of her work is done before 6 a. m. or after 10 p. m. she may not work more than eight hours a day. Certain exceptions are made for Allegany

county, and the act does not apply to females employed in canning perishable fruits and vegetables.

New Jersey.—In New Jersey, women must not be "employed, allowed or permitted" to work more than ten hours a day or 60 a week, and not more than six days a week in manufacturing and mercantile establishments, bakeries, laundries or restaurants. The law does not apply to canneries nor to mercantile establishments during the six working days before Christmas.

New York.—In New York the employment of a woman in a factory, mercantile establishment, mill or workshop within four weeks after she has given birth to a child is forbidden. The hours of labor of women in factories are reduced from ten, to nine a day, and from 60, to 54 a week. Provision is made for overtime, irregularly, up to 12 hours a day, but not more than 54 a week. The canning of perishable products is exempt between June 15 and Oct. 15 of each year.

Virginia.—In Virginia, no female may work in a coal mine; and the ten-hour law for factories and manufacturing establishments is extended to cover workshops and mercantile establishments. Exceptions are made of women whose full time is employed as bookkeepers, stenographers, cashiers, or office assistants; of establishments engaged exclusively in packing fruits and vegetables from July 1 to Nov. 1; and of mercantile establishments on Saturdays, and in towns of less than 2,000 inhabitants.

MISCELLANEOUS

Several laws of this year, relate to the protection of working men in their employment and to rewards for suggested improvements in methods. Arizona and Massachusetts acts protect members of the militia from being deprived of employment on account of such membership, and the Minnesota and New Mexico corrupt-practices' acts forbid employers to exercise political influence over their employees by reason of their power to discharge or to reduce wages. Employees in New Mexico may have two hours' time on election day, in which to vote.

XVIII. PREVENTION, CORRECTION, AND CHARITY

ALEXANDER JOHNSON

General Survey of the Year.—In the opinion of the writer, the most notable developments of the year 1912 in this department have been:

The social-welfare work of the Men and Religion Forward Movement, which seems to have established the fact that "the gospel of reform, preached by the present-day social worker, has become a dogma of the Christian faith."

The rapid and widespread adherence to the theory that preventive measures are of the utmost importance, and that, compared with them, efforts at relief, correction and cure are of little consequence.

The acceptance of the science, or art, of eugenics, especially as it relates to the mentally defective and to the degenerate.

The abandonment of the "conspiracy of silence" with regard to sex matters, the frank, outspoken consideration of venereal disease in its relations to social welfare, and the beginning of national public attention to sex hygiene and sex education.

In prison affairs, the spread of the honor system of prison labor, by which convicts are sent outside the walls under the control of foremen, but without armed guards, for road work, forestry, institution building, drainage, farming and other out-of-door labor; and the creation of the laboratory of social hygiene in connection with the reformatory for women in New York, with its promise of the establishment of a method by means of which the defectives may be sifted out from the merely delinquent before trial and sentence, instead of afterward.

In federal legislation, the passage in Congress of the Esch Phosphorus

bill, by which the importation and manufacture of poisonous matches has been prohibited; this legislation by Congress seems to be an important step toward attention to social matters by the federal Government; the passage of the Hughes-Borah bill which creates a federal commission upon the conditions of labor in the United States; and the creation of the Children's Bureau under the federal Department of Commerce and Labor, with a noted and able woman social worker of long and varied experience at its head, its object being to investigate and report upon all subjects belonging to the welfare of the children of the nation.

Conferences.—Most of the conferences reported in previous issues of the YEAR BOOK have held annual sessions during 1912. The following are either new organizations or show notable new developments:

The National Conference of Charities and Correction met in Cleveland, in June, with 2,013 delegates registered as in attendance. In connection with it, either immediately before or during its week of sessions, twelve cognate national associations held annual or biennial meetings. The connection between the larger organization and the others has been merely one of interest and sympathy; at Cleveland a short step toward closer coöperation was taken by a resolution inviting the friendly, cognate associations to recommend certain of their members for places on the standing committees of the National Conference of Charities and Correction.

State Conferences of Charities and Correction.—The following states now have annual conferences of charities and correction, or other similar meet-

ings for the same purposes;¹ Alabama, Arkansas, California, Colorado, Delaware, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Washington, Wisconsin.

The International Congress of Hygiene and Demography (quinquennial) met, for the first time in the United States in Washington, D. C., at the invitation of the federal Government, in September. This is one of the most important of the many international congresses, and was by far the most important meeting that occurred in the United States during the year. (See also XXX, *Public Health and Hygiene*; and XXXIV, *Education*.)

The American Nursing Association met in Chicago in July, and adopted a new name, the "National Organization of Public Health Nursing."

The Southern Sociological Conference.—At the call of the governor of Tennessee, the Southern Sociological

Conference organized at Nashville in May. Its purpose is to do for the southern states what the National Conference of Charities does for the nation. Delegates were present from 16 southern or southwestern states. The departments of social welfare receiving chief attention at the initial meeting were child welfare, prison life and reform, and public health. A benevolent and public spirited woman of the South has endowed the conference for five years in an amount to make its continuance, for that period at least, certain. Its organic law provides that whenever the National Conference of Charities and Correction shall meet in the South, the Southern Sociological Congress will merge with it for that year.

A National Society for Promoting Efficiency has been organized with headquarters in New York, and has held public meetings (see XXIII, *Industrial Management*).

Other conferences are noted under the departments of this report in which their purpose belongs.

PREVENTION

PREVENTION OF DEFECTIVENESS

Extent and Increase of Defectiveness.—Researches now in progress and only partially reported show that the number of mental defectives (idiots, imbeciles, epileptics, and the hereditarily insane) is much larger than the estimates which have been current. The actual amount of defectiveness is not, and probably never will be, known precisely. Estimates based on recent researches and made during the current year show, instead of the previously accepted minimum of one in 500 and maximum of one in 300, a probable ratio of one, or even one and one-half per cent. of the whole population (see also under "Conferences," *infra*) and other indications, such as the number of children found in the families

investigated, etc., point to a ratio of increase much more rapid than that of the whole population.

Conferences.—Eugenics and the prevention of defectiveness received a great deal of attention by various public bodies during the year. The American Medico-Psychological Association gave special attention to eugenics. It was a highly significant fact that a convention made up of those who have had most experience in the care of the insane should come out emphatically in favor of rigorous measures of prevention.

The National Association for the Study of the Feeble-Minded and the Association for the Study of Epilepsy held a joint session at Vineland. The researches which are now being made by the field workers, in connection with the Vineland training school, the state village for epileptics at Skillman, N. J., the state Home for Girls and the hospitals for the insane, excited a great deal of interest. The whole trend of the meetings and discussions was toward prevention.

¹ Information about any of these or about the National Conference of Charities and Correction can be had by writing to the writer at Angola, Ind.

The National Conference of Charities and Correction discussed the treatment of defectives from the point of view of prevention. It was asserted that a careful and conservative estimate of the number of defectives in the United States; including the insane, feeble-minded, blind, deaf-mutes and chronic paupers, "all those mentally, physically or socially defective," is about 3,000,000, or 3.5 per cent. of the total population. About one-sixth of these are under institutional care, but those who are not are equally defective and non-supporting with those who are. Besides the above number there are also a great many border-line cases.

Investigations and Legislation.—In Delaware a committee has been formed to secure statistics of the feeble-minded and take steps toward proper provision for them. Research work in causes and extent of defectiveness is being conducted in Minnesota. So far no results have been published. An investigation as to the degenerate population is being conducted in Rhode Island. A recent law in New Jersey requires the collection of statistics relating to defectives; physicians are to report all cases of which they have knowledge, to the Commission of Charities, who then must assume their legal guardianship and make some proper disposal of them. The *Survey*, Vol. XXVIII, No. 26, has a striking case, entitled "Unto the Third Generation," a history of a feeble-minded family by one of the field workers who is engaged in research work in New Jersey. Much of the research work now being done in New Jersey is paid for by the state under appropriations made by the legislature to the State Hospital, the State Home for Girls, and the Department of Charities. The field workers employed by the state institutions and those employed by the Executive Committee of the Training School at Vineland are coöperating upon a systematic plan which gives promise of excellent results. At the village of epileptics and the Training School expert psychologists are directing the research work.

Probably the most important and far-reaching single piece of social

legislation with regard to defectives was an act of the legislature of New Jersey requiring a special class for atypical children in every school district where ten such children are found and providing a state subsidy to pay the specially trained teacher required for such a class. The effect of the law will be to disclose the actual number of defective children in the state, especially those of the higher grades, from whom the danger of degenerative increase is the greatest. In Pennsylvania a commission has been appointed to investigate and report a plan for the segregation and treatment of all the feeble-minded and epileptics; the commission is proceeding upon the assumption that there are 15,000 to 18,000 defectives in the state, of whom 7,000 are women of child-bearing age.

Eugenics.—Among the most notable departments of prevention is the present effort to study and promote eugenics. "There are disquieting indications in all civilized countries that the quality level of the national life is not rising to meet the greater demands of the increasingly complex conditions of living . . . if it is not actually falling." At the International Eugenics Congress in London, England, a number of American delegates took a prominent part. (See also XVI, *Eugenics*.)

A school which aims to give to the teacher, the parent and the social worker, a practical ground work in eugenics has been opened in Boston. This is an outgrowth of lecture courses which have been given in various parts of New England during the past five years. The general purposes of the school are said to be to arouse family pride through the study of family history, to remove the ignorance and superstition which at present shroud the subjects of sex and reproduction, to dignify the function of parenthood and to warn against race poisons and false traditions and practices.

Sex Hygiene.—A report on the teaching of sex hygiene has been made by a committee composed of representatives of the American Society for Sanitary and Moral Prophylaxis, the American Federation for Sex Hygiene, the New York Associa-

tion of Biology Teachers and the School of Pedagogy. The gist of the report is that the facts come from the scientists (hygienists and biologists) but the motive at all ages and under all circumstances must be ethical; no lower motives will do. It is right and necessary to enact laws against vice, to equip hospitals for venereal cases, to protect and rescue girls, to put a fear of the great black plague into the minds of young men. But the only way to win the fight is to make every boy and girl understand the reason for sex and appreciate sex morality.

The National Conference of Charities and Correction devoted four sessions during conference week to sex hygiene. These were crowded and great public interest was shown. Several papers on eugenics were read at these meetings.

That a vast amount of misery, disease and poverty may be prevented by instruction in the laws of life, was one of the main thoughts brought out at the meeting of the American Federation for Sex Hygiene.

The National Education Association took active interest in sex hygiene and the prevention of defectiveness, moved to do so by the constant pressure of the problems of the defectives upon the school systems of the country; some form of sex education was reported as being given in 138 schools. Instruction in sex hygiene is made obligatory by the rules of the state Board of Education in the normal schools of the state of Washington. A very remarkable paper on "Teaching Sex Hygiene in the Normal Schools" was read at the National Conference of Charities by an instructor in physiology of the Michigan Normal College of Ypsilanti.

Private societies for social hygiene and sex education are multiplying rapidly, committees on the subject have been appointed by various national and local religious bodies. A society for sex hygiene has been organized in Wilmington, Del. A new Society of Social and Moral Hygiene in Seattle, specializes in the instruction of the parents of school children. The Social Hygiene Society of Portland, Oregon, in cooperation with

the state Board of Health, has established an advisory department for free sex advice, open through the day and also evenings and Sundays.

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Sterilization.—The American Institute of Criminal Law and Criminology at its annual meeting reported on sterilization that the operation is now legal in eight states. The Institute recommended the extension of the law to every state and advocated the compilation of genealogies of defectives; the establishment of a laboratory for mental diseases in each state; and the establishment of chairs of eugenics in every university.

The sterilization law of Wyoming has been held constitutional in an appeal, the case being that of a man convicted of unnatural crime. The last New York legislature enacted a sterilization law. In Idaho the operation is being used in the Hospital for the Insane, results so far being apparently beneficial. In Indiana the operation of sterilization was temporarily suspended in deference to the opinion of the present governor, who believes it unconstitutional. No effort has been made so far to secure a court decision.

PREVENTION OF VICE

The Social Evil.—An important source of distress is found in the results of social vice of various kinds.

During the year much public attention has been given to sexual vice, its consequences and its prevention.

Results of the vice commissions of last year are reported; from Minneapolis that the "segregated districts" have been abandoned; from Chicago that one result has been a marked increase of efficiency, a practical reorganization, of the police department. (See also VII, *Municipal Government*.)

In several states crimes against public morality are having a new valuation as compared with those against property; time sentences are replacing fines, which have been merely assessments on the profits of vice.

The writ of injunction is being successfully used in Illinois to close up houses of ill-fame, as private, as well as public, nuisances, the writs being directed against the owners of the property as well as against the keepers.

Vice commissions are at work in Philadelphia, Portland, Ore., and many smaller cities.

From Oregon comes a report of a campaign for social hygiene (see *Prevention of Defectiveness, supra*); Portland has a municipal department for the public safety of women.

In New York venereal diseases occurring in institutions, public or private, must be reported to the Department of Health; in California all venereal cases are now reportable.

The American Vigilance Association with general headquarters at Chicago and a library and publishing office in New York, is rapidly developing a promising activity.

The war against the segregation of vice in Chicago has assumed city-wide proportions. Since the vice commission rendered its report to the mayor and city council it has been obvious that the city administration and the police, the county authorities and the state's attorney would have to reckon with the appalling situation which the commission exposed to the light. The hand of the county authorities was forced by the vigorous and persistent attacks of a woman taxpayer in an outlying town. Charged by her directly before the grand jury as well as in the press,

not only with responsibility for the existence of illegal conditions, but with defeating attempts to get legal aid to improve them, the state's attorney took sudden and drastic action. He issued hundreds of warrants for the arrest of the keepers and inmates of disorderly resorts and closed up almost all of them within a week. Spectacular citations by *capias* were also issued upon owners and agents of property used by illegal resorts.

Some good is resulting. It has been shown that the segregated district can be summarily closed and therefore can permanently be abolished. The special interest of commercialized vice, although estimated by the vice commission as amounting to \$15,000,000 a year, has not proved able to protect itself from all the legal resources at the command of the community. The women who have led the forlorn hope in keeping open ways of escape from the human shambles, into refuges and homes, have had their inadequate resources strengthened. Few, if any, of the dislodged women have taken advantage of this offer.

The city council has taken some action. It has appointed a committee of nine aldermen to investigate and report, notwithstanding that they have done nothing responsive to the complete and masterly report of the vice commission made a year ago.

A new law in Kentucky provides fine and imprisonment for any person convicted of taking or admitting a girl under 16 into a house of prostitution.

The Albert law which abolished the segregation of the social evil in Nebraska one year ago is on trial. The radical provisions of this act are sharply criticized and condemned by many and just as strongly commended by others. Reports from all parts of Nebraska except Omaha indicate that the law is effective and welcomed by the people. In Omaha there is much complaint of street walkers and of immoral women being discovered in all parts of the city, and of the spread of disease, etc. More time is required intelligently to estimate results.

Inebriety.—In Massachusetts a new state hospital for hopeful in-

ebriates with a 1,000-acre colony farm attached is under way. In Kentucky a new law of this year prohibits any person under 21 from entering a saloon, with penalty for the proprietor.

In Nova Scotia the prohibition law has been reinforced with special reference to fraudulent medical prescriptions.

The futility of the ordinary workhouse sentence for drunkenness is shown by some cases recently reported in New York. One man now 61 years of age has been sent to the workhouse 62 different times. He has spent 3,163 days there at a total cost for maintenance alone of \$1,868.55. Other similar cases are reported and are well known. The farm colony treatment for inebriates is to be tried in New York and is contemplated in many states.

At the thirteenth International Congress on Alcoholism, at The Hague, 555 delegates and members signed a declaration indorsing the pledge method of reforming drunkards known as the Pollard system, named after Judge William J. Pollard of St. Louis, who first made use of it. The method is to release persons convicted of drunkenness on a suspended sentence on condition that they sign a pledge of total abstinence for one year. The plan has been adopted by legislation in Great Britain, Victoria (Australia) and Vermont. Judge Pollard claims that of the thousands whom he has bound in that way during ten years, less than five per cent. have forfeited suspension of sentence.

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PREVENTION OF USURY

At the Maine State Conference of Charities and Corrections in 1911 the subject of "loan sharks" was considered. In Portland an association was incorporated under the name of the People's Loan Company. An appeal to the legislature in 1911 for assistance in fighting this evil was treated with indifference, but the So-

cial Service Committee of the Men and Religion Forward Movement has appointed a committee to assist in securing the passage of suitable laws for driving loan sharks out of business.

A court decision in New York has made the conviction of "loan sharks" possible. In Milwaukee a millionaire loan shark served 90 days in the House of Correction, the first instance of imprisonment as a punishment in such cases. The Chattel Loan Society has been organized in New York to compete with the loan sharks. A loan and savings institution on a new and highly useful and benevolent plan was reported to the Southern Sociological Congress from Atlanta, Ga. The chattel-loan law of Maryland has been amended in the interest of the borrower. A Provident Loan Society in St. Paul, Minnesota, opened for business Feb. 29, 1912. The Pennsylvania Loan Co. has been organized at Philadelphia to lend money on indorsed notes; while a purely business enterprise, it will save some victims of the loan sharks. A scheme for granting government loans to new settlers upon farms has been adopted in Nova Scotia.

PREVENTION OF JUVENILE DELINQUENCY

Everything done for children may be properly classed as prevention; the work for delinquent children is therefore classed under this head instead of under "correction," which term we use at present, to include reformatory and punitive efforts with adults.

Juvenile Courts have been newly established in Alabama, Arkansas (2 cities), Florida (7 cities), and South Carolina. The law has been strengthened in Nova Scotia, and extended to the smaller cities in Virginia. A law for separate courts in cities of the first class has been passed in New Jersey.

The National Association of Junior Republics has opened an office in New York. Six states now have seven republics, and two are about starting. The movement has spread to England and France.

Alabama has just opened an industrial school for girls and a House of Refuge for girls, both at Birmingham.

Minors under fourteen may not be held in jail in Idaho.

In Kentucky the newly appointed prison commissioners have begun some radical reforms at the state reformatory at Lexington. Among other abuses, a great many dependent children have been sent to the reformatory merely that the counties might be relieved of them. There are now more than 800 children in the reformatory, many of them as young as seven years.

The Missouri State Industrial School for Negro Girls has been located at Tipton.

New Jersey has a law establishing parental responsibility in cases of juvenile delinquency. County "schools of detention" are provided for by law in New Jersey.

A Juvenile Court Association has been formed in Oklahoma which furnished numerous volunteer probation officers. A decision has been handed down by a high court in Oklahoma that no child under 16 can commit a crime.

The Virginia State Board of Charities has received authority to place out certain juvenile delinquents in family homes.

The juvenile court of Chicago was the first of its kind. Now it has the first woman judge. Judge Pinckney refused to accept a reappointment unless he might have the help of a woman associate on the bench, and Mary Bartelme, who has been a teacher and also active in juvenile court work, has been appointed.

New York City is to have five probationary schools for incorrigible boys, who will be taken out of the regular classes so that they may have special training without wasting the time of the normal pupils. The probationary schools will, it is hoped, have a good effect in diminishing truancy. These schools will have a specially adapted course of study with a maximum of manual training and individual work. A series of conferences on probation have been held in the City Hall, New York. A serious raid on probation officers in New

York City was conducted by politicians wanting the jobs as spoils; positions were kept in the classified service by the Court of Appeals.

In Seattle a research department for the study of causes, etc., has been connected with the Court.

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CHILD WELFARE

The Children's Bureau. — After several years of effort by the National Child Labor Committee and many prominent social workers, Congress has authorized the establishment of a Children's Bureau. Its purpose is to investigate and report upon all matters pertaining to the welfare of children and child life among all classes of the people, and it will investigate especially the questions of infant mortality, the birth rate, orphanage, juvenile courts, desertion, dangerous occupations, accidents and diseases of children, employment, and legislation affecting children in the several states and territories. The new Bureau is assured of the co-operation of the existing federal bureaus which are concerned with social affairs. The director is appointed by the President and the first one, Miss Julia C. Lathrop, is a woman of long and varied experience in social work. All subordinate officers come under the civil service law. The new Bureau is placed under the Department of Commerce and Labor. The appropriation for the first year's work is \$29,400. It is interesting to note that the only serious opposition to the enactment of the law came from the American Humane Society and the New York Society for the Prevention of Cruelty to Children. The objection was directed toward the plenary power of inspection and su-

pervision which seems to reside in the Bureau.

One of the first investigations that will be attempted is that of infant mortality. This will necessitate a study of registration of births and deaths and the bureau will coöperate with the organizations, both governmental and private, now working on that subject. The office of librarian reader has been created in the bureau, so that the vast amount of material on child welfare to be found in current literature may be collected and utilized.

Child Welfare Associations.—Child welfare associations of various kinds are multiplying. In Washington, D. C., a "Children's Council" has been formed and in Indiana a state "Children's Bureau." In Georgia a branch of the National Children's Home Finding Society has taken root. In Portland, Ore., a Big Sisterhood has been established. In Louisville, Ky., the fourth school-house social center has been opened. A Child Welfare Association has been formed in Cincinnati, its purpose being somewhat similar to that of the Juvenile Protective Association of Chicago, namely, to prevent children falling into vice by watchfulness over amusements, dance halls, moving-picture shows, and so on. The use of public schools as social centers will be one object of the new association. The new society was organized at a dinner given by the Business Men's Club of Cincinnati.

A movement is on foot in Europe to establish an International Bureau of Child Welfare. A committee which has undertaken to establish such a bureau will shortly meet in Brussels to complete the organization.

Child Welfare and Education.—Charities and education are so close together that at the New Jersey State Conference of Charities, in March, the chief element of discussion was the reforms that are needed in the educational system, so that it may better prepare the children for life.

The *Oregon Daily Journal* of Portland has begun a child-welfare department in the Saturday evening edition.

Child welfare exhibits are reported from Louisville, Ky., Kansas City and St. Louis, Mo., Montreal, Canada, Buffalo, N. Y., and Northampton, Mass. Welfare conferences have been held in connection with the exhibits. At Northampton the exhibit was specially aimed at the rural districts. At Montreal the government granted a sum of money in aid; \$50,000 in all was raised and a permanent child welfare conference organized. St. Louis reported 158,000 persons attending. The exhibit was made to show the "vicious circle"—poverty, child labor, unskilled labor, low wages. (See also "Prevention of Infant Mortality," *infra*.)

A legislative committee in Indiana will report in favor of a state-aided system of vocational training in the public schools.

Medical inspection in the public schools, which at first was bitterly opposed, has now become popular in Alabama. (See also XXXIV, *Education*.)

A conference on the conservation of school children was held under the auspices of the American Academy of Medicine. The proceedings are published by the Academy.

Care of Dependent Children.—In Kansas indigent children with maladies curable by medical or surgical means may now be taken for care and treatment at the expense of the state to the Rosedale Hospital, which is an adjunct of the state university.

A children's hospital in Maine has recognized that its responsibility to its child patients is not ended when they are cured, and has effected co-operation with other organizations for child welfare so as to make sure of proper after care. This is an example of the relation between medical and social work which is commanding much attention.

The State Charities Aid Association of New Jersey called a conference of persons interested in dependent children which requested the governor to appoint a commission to study and report with recommendations the present situation in New Jersey as concerns the treatment of delinquent and neglected children, said commission to be authorized by legislative

enactment and to have means and authority to conduct the inquiry.

The Rhode Island State Home and School is now empowered to board out children at the expense of the state.

Nova Scotia has a new provincial officer, the superintendent of neglected and dependent children. The department of which he is the head will also organize children's aid societies.

The Humane Society of Cleveland has begun a home-finding department for dependent children. This was established at the request of the Western Reserve Child Welfare Council in lieu of the creation of a new society for the purpose.

The Washburn Memorial Asylum of Minneapolis has arranged a plan for coöperation with the Minneapolis State Public School (for dependents) under which a study will be made of the children in the asylum, their vocational fitness will be determined and at an appropriate age they will be transferred to the state institution for trade teaching. This is thought to be the first example of efficient coöperation of the kind between a state institution and a private orphan asylum.

A Children's Agency, with special reference to placing children in family homes, has been organized in Los Angeles.

The municipal assembly of St. Louis has established a board of children's guardians. This board has charge of the industrial school, which will be moved to the country. The delinquent children now in the school will be placed out in family homes and henceforth only delinquent children sent by the juvenile court will be retained in the school. The most radical feature of this new legislation is the provision to pay pensions to widows with small children, instead of placing the children in foster homes.

Protection of Orphan Minors in Oklahoma.—The third legislature of Oklahoma enacted an amendment to the charities and correction law, greatly enlarging the power and duties of the commissioner in regard to orphan children. She is empowered to intervene as next friend in behalf

of every orphan minor child when it appears to her that his estates are mismanaged or dishonestly handled. Under this amendment the department has intervened in over 3,000 cases, of which about 2,000 are pending. The result of the suits and final disposition is the recovery of \$70,000 in cash from dishonest guardians and regaining 115,000 acres of land.

A New Children's Code in Ohio.—The Ohio commission on laws relating to children has prepared and published a full and comprehensive report, which is really a codification of existing laws and also a suggestion of many new ones. The main thought that underlies the suggested new laws is that of prevention.

Pensions to widows with children, child labor on the stage, medical inspection in schools, supervision of institutions and juvenile delinquency are some of the subjects to which the commission gives attention. The supervision of institutions is especially aimed at as a means of following up the children after they are placed out. Private children's homes, the commission says, should be licensed by the state board of charities after careful inspection. The age of delinquency should be raised to eighteen, and the "contributory delinquency" idea should be adopted. The commission commends the uniform child-labor law proposed by the National Child Labor Committee, but because of existing laws does not recommend its adoption in full. The commission hesitates to recommend sterilization of defectives, but falls back on segregation. It provides in the code for widows' pensions, with certain safeguards not found in the laws upon the subject of some other states. The new code will be acted on by the general assembly of 1913.

Institutions for Children.—Modern children's institutions are built on the cottage plan, and this demands numbers of highly competent trained cottage-mothers. A training school for cottage-mothers has been established by the Hebrew Sheltering Guardian Orphan Asylum of New York especially to prepare for the work of their new institution at Pleasantville.

The identity of babies in hospitals, especially of foundlings and those in

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maternity wards, is sometimes in danger of being lost. This is avoided at Bellevue, New York, by the finger-print method. It is suggested that the plan should be universal with a central registration. If adopted, the number of unidentified dead, now terribly large, would be reduced to a minimum.

In Louisville, Kentucky, a parental home and school for dependent children has been built. The purpose is to separate the merely dependent from the delinquent. The commission in charge of the home, which is supported by the city, consists of five men and two women appointed by the county judge.

Seattle and Tacoma each has a home for Japanese mothers and children.

The first children's hospital in Alabama was opened during the year.

Child Labor.—The eighth annual Child Labor Conference was held at Louisville under the auspices of the National Child Labor Committee. The Committee publishes a report on Child Labor Laws in the annual report of the Conference.

Louisiana took a backward step in exempting children on the stage from the operation of the child labor laws. Excessive child labor is reported at the canneries in Maryland. A state committee on child labor has been formed in Florida. Wisconsin has amended the newsboys act and raised the age limit of child labor to 17 for boys and 18 for girls, and has also made the hours of labor limit eight for children under 16. Maryland has a new law with a compulsory-education law that fits it. Some stringent amendments have been made in Kansas to the child-labor laws. The uniform child-labor law, adopted in 1911 by the Commission on Uniform State Laws, has been adopted in 1912 by Maryland and Mississippi. Mississippi takes its place with Ohio, in establishing the eight-hour day for boys under 16 and girls under 18, and in the prohibition of night work for the same girls and boys. (See also XVII, *Labor Legislation*.)

Prevention of Infant Mortality.—At the annual meeting of the American Medical Association, the presidential address was principally devoted

to the problems of infant mortality and was such a paper as might well have been given at the National Conference of Charities. Wilmington, Del., had a Baby's Health Exhibit. In New York City the Babies Welfare Association claims to have saved 500 lives in 1912 (up to Aug. 10); pure milk, instruction of mothers, improved sanitation, etc., have been the means employed. The Chicago Department of Health declares that there are approximately 225,000 avoidable deaths of children under two years of age in the United States each year. An attack on the pure-milk ordinances in Chicago resulted in some backward steps, but under pressure from many charitable agencies, the council reconsidered its action and the babies' milk supply is again safeguarded. In New Hampshire lying-in hospitals and infants' boarding houses are inspected and licensed by the state Board of Charities. The Pennsylvania Children's Aid Society has established a department for the promotion of wet nursing. The Civic Club of Portland, Me., sustains a milk station and has, in connection with it, good medical work for babies.

A series of studies on infant welfare has been contributed by Prof. C. R. Henderson to the *American Journal of Sociology*, the final paper appearing in the issue of May, 1912. Some important phases of infant-welfare work reported from France and Germany might well be copied in this country.

At the child welfare exhibit in Buffalo, the special department in infants was devoted to a demonstration of the complete proper care of the infant, beginning before birth, and continuing during the first two years of life. The motto of the exhibit was: "It is not the babies who are born, but the babies saved that count."

A moving-picture film is in preparation designed to show the advantage of home care and nursing for infants over the best possible care and nursing that can be given in a foundling's home or other institution. (See also XXX, *Public Health and Hygiene*.)

The Russell Sage Foundation has

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blocked out a building designed to exhibit the chief sanitary features which are essential in saving the lives and improving the vitality of babies who must have temporary institutional care. The modern founding home must care for the mother and the baby together. By doing so the rate of infant mortality can be much reduced.

A novel and highly promising method to promote the welfare of children, especially of babies, has been developed in Milwaukee. The agency for the purpose has been called an educational health center. It is a combination of milk stations, prophylactic dispensary, settlement, public-school center and district office of the Associated Charities. Only one such center has yet been created, but others will probably follow. It covers an area of 33 blocks, comprising the exact boundaries of one of the Catholic parishes. This center has a complete birth registration of its district, has exercised partial pre-natal and fairly complete post-natal supervision over every baby born therein; has organized and instructed the midwives; has elevated the standards of the physicians; has developed the recreational life of mothers; has found boarding homes for babies; has educated parents along health lines and has brought to the families in its area, all the social benefits existing in the community. It is maintained by the municipality, but is organized on a social basis exactly as any private philanthropy, with a committee of citizens who have contributed much thought, time and effort to its work. A fundamental feature is the

coordination of the work of the center, with the medical colleges, lying-in charities and infants' hospitals, so that medical students may have an opportunity to study preventive medicine in the home and learn the sociological conditions affecting the public health. The cost of the center in Milwaukee will be for the first year about \$6,000. This includes one head nurse, three assistants, seven physicians, a clerk, and others. The center will have cared for over 1,000 infants before the end of the year. It is estimated that the saving in infants' lives effected by the center will pay the cost many times over. The population of a unit area for this work should be about 16,000; a city of 160,000 should therefore have ten stations. The promoters believe that by the means described "ignorance can be overcome, the effects of poverty can be alleviated and not only infant mortality, but the greater problem of the health of the entire community can be met."

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CORRECTION

LAWS AND COURTS

In California lazy fathers may be put to work on the roads at \$1.50 per day, the earnings going to the neglected families.

An amendment to the constitution in California makes it possible to send grafters to prison. Hitherto the Supreme Court has always found technicalities enough to release them when a lower court has convicted. Henceforth judgments cannot be re-

versed on technicalities unless the Supreme Court finds that substantial injustice has been done.

Kansas has a new and stringent wife-desertion act. Desertion is made a felony with severe penalties.

In Maryland a new People's Court will replace the justice courts in which the fee system has caused much abuse.

In New Jersey a new law calls for the keeping of complete records in jails.

Oklahoma has a new law creating the office of public defender.

In Rhode Island an appropriation of \$25,000 was made to the Board of State Charities to be used to pay the expenses of the extradition of family deserters who have gone outside the state. The families of men who are in prison for desertion may now be supported at public expense through the state probation officer.

Manitoba has a series of new laws on desertion, illegitimacy, and other offenses of a similar class.

The Domestic Relations Court in Chicago has taken a new place in the minds of those who must go to it. It is now thought of not as something "down on them," but as a place of friendship where their troubles may be straightened out instead of being more tangled. The great points gained by the methods adopted in this court have been, uniformity of treatment and decisions; removal of women and children from the police courts; more intelligent understanding, and hence more sympathy with and help for the offenders; vigorous reaching out toward the causes of delinquency and dependency in children; keeping of husbands and wives together when possible; compulsion of deserters to support their families; prompt trials; good records; watchful care over women and children. These results have been obtained because the judges, led by the chief justice, have become socialized, and because efficient coöperation has been established with several very active private agencies of the city.

Under recent legislation matrons have been appointed to investigate all cases of women accused in the courts of Indianapolis and Terre Haute, Ind.

A night court has been established in Philadelphia. A woman probation officer has been employed for it, her salary being provided by a committee of private citizens.

Legal Aid Societies.—The legal-aid societies of the United States met in New York and organized into a national association. This is to be known as the Alliance of Legal-Aid Societies, and it has as its first president Arthur von Briesen, who is the president of the New York society

and the originator of the legal-aid society movement. The purpose of the alliance is to give publicity to the work of the legal-aid societies and bring about coöperation and increased efficiency in their work, also to encourage the formation of new societies. One of the most discussed questions at the first meeting of the alliance was whether the legal-aid societies should take up cases of industrial accident and compensations therefor.

It is an interesting point in connection with legal-aid work to know that although it began in the United States, yet Germany has gone far ahead of this country in the number of societies and also in the organization of a central alliance. In that empire there are 307 societies which handle over half a million cases annually.

PRISONS AND PRISON REFORM

Views of State Governors on Prison Reform.—A symposium on prison reform, in which the participants were the governors of 17 states, appears in the *Review* for March. The symposium was by letter, in answer to a circular letter sent out to all governors in January, 1912, asking them to state (1) needed prison reforms in their state; (2) the reform most needed; (3) the best solution for each state of the problem of prison labor; (4) the governor's opinion on the question of capital punishment.

Four of the governors who answered the questions feel that the criminal laws of their states require no special amendment, although these admit that some reforms in practice are desirable. The reforms favored by the other 13 include: the establishment of a reformatory (3); the indeterminate sentence and parole (2); the district workhouse system to replace jail sentences (1); pardoning and parole power to be placed with a board (2); wider opportunity (legal) for the employment of convicts (1); abolition of the lease system (2); abolition of contract labor in prisons (2); good management (1); employment for all prisoners that will benefit the prisoners and

remunerate the state (1); thorough renovation of the penal institutions both state and county; time payment of fines (1); buildings better adapted to their use (1); help to prisoners' families (1); punishment by dark cell instead of whip (1). Two of the governors expressly favor purchasing a large acreage of land; seven favor extensive use of farming, forestry and other out-door work, and ten are emphatically in favor of road building by convicts, of whom five claimed successful practice in their states; three of the latter attribute the success to the honor system. On the question of capital punishment, the governors were about evenly divided; six were against it and seven favored it, while six expressed no opinion.

Capital Punishment.—A symposium on capital punishment followed, in which the governors were joined by about 100 of the leading penologists, prison wardens and managers. A great many opinions were given in each case. Many persons expressed themselves as opposed to capital punishment, but desired before its abolition to see some safeguards against the foolish, sentimental and sometimes influenced pardons so often given by governors.

The objections to capital punishment are summed up by a prison warden and by a professor of sociology who is one of the best-known theoretical penologists in the country. The warden states his objections thus:

1. Because I do not believe that capital punishment is in harmony with and abreast of the best thought of modern civilisation.

2. Because it seems wrong in every sense for the state to take what it cannot give.

3. Because human life is the prerogative of Divine Providence. God alone can give it and He alone in His divine wisdom has the right to take it away.

4. Because statistics do not show that capital punishment prevents homicides.

5. Because the whole scheme of punishment should carry with it a chance for repentance and reform—whether the offender is ever released from prison or not.

The professor says: It too often serves revenge; it is not needed for protection of society; it occasionally is inflicted on the guiltless; it is irreparable; it tends to increase brutality and murder; and it diverts attention from preventive policies.

The symposium includes a statement of the law on the question from 43 states and of the number of executions during the past year from the 37 of these states in which capital punishment is employed. The total number of executions from the states reporting was 72, the number in each state varying from one in each of three states which nominally have the death penalty, to 12. From one-half of the 37 states the number of executions is not given.

Defectiveness Among Criminals.—

The theory has long been held by psychologists and by many penologists, that a large proportion of criminals are mentally defective. At the New York State Reformatory for Women, a careful examination made by the superintendent and physician disclosed the fact that from 20 to 30 per cent. of the girls received are defectives. These sub-normals are a serious hindrance to discipline, they clog the educational systems, and they cannot be reformed so as to be self-controlling and self-supporting on discharge. They should be given permanent custodial care in an appropriate institution. The obvious thing to do in such cases is to examine them before conviction instead of afterward, and they should be committed to an institution for the feeble-minded instead of to the reformatory. But up to the present time there is neither the method nor the machinery to make the test.

A notable new departure with regard to this class is advanced in the creation of a laboratory of social research in connection with the Bedford (N. Y.) Reformatory. This is situated on a farm of 93 acres adjoining the Reformatory farm so as to have the patients under proper control. The farm is leased to the management for a nominal sum.

A reception building, which will accommodate 50 young women, will be erected and a research laboratory will be in a separate building. The

purpose of the laboratory is an intensely practical one to work out the methodology for the use of the magistrates in disposing of the cases of girls convicted of crime. It is believed that in the prosecution of this plan a large body of scientific data as to heredity, economic conditions, and other causes of crime will be collected. The laboratory will have three departments, psychology, sociology and nervous pathology, with a woman at the head of each. A consulting staff of unpaid specialists will make available the services of men also. The research work is to be financed entirely by the Bureau of Social Hygiene, while the cost of keeping the girls on the separate estate will be met by the Reformatory; this, of course, will be no added expense to the Reformatory.

Prison Revolts.—Three serious prison revolts have occurred during the year in the state prisons of Nebraska, Wyoming, and Michigan. In Nebraska the management for many years past has been entirely dominated by the idea of partisan spoils. The result has been gross corruption, inane management, utter lack of discipline among the employees, excessive severity to the convicts, drunkenness and profanity among the guards, graft of every description, and unutterable vices, including permission if not actual encouragement of sexual perversion. A regular trade has existed between guards and convicts in liquor and drugs, and to add to such horrors, there has been terrible overcrowding. The fearful conditions culminated in a mutiny, with the murder of the warden and two associates, the escape of a number of convicts, who killed three of those who tried to capture them, and the killing of three convicts by a sheriff's posse. The full story is printed in the *Survey*, Vol. XXVIII, No. 3. The governor promptly took charge and produced some semblance of order. But the reforms cannot be completed without some changes of law, which it is by no means certain that the legislature will make.

The most serious prison mutiny in the history of this country occurred at the state penitentiary at Rawlins, Wyoming, in October. Begin-

ning with the lynching of a negro convict by his fellows, it immediately developed into an insurrection. First twenty prisoners, led by a murderer and outlaw, dashed at the gate of the stockade, burst it open and fled to the hills, pursued, ineffectually, by a few guards. The next day a party of life termers overpowered the cell-house keeper, took his keys, released their comrades and made a rush for the gates. A battle ensued, in which three guards and many convicts lost their lives, but a second group of about twenty made their escape. In the course of a week all but seven were captured or killed, the other seven probably perished of cold and hunger among the hills to which they fled. The remarkable thing in the story is that the convicts were all or most of them, armed with pistols, cleavers, hatchets or knives. There is no story of such abuses as are reported from Nebraska, but the administration that is so weak or careless as to allow desperate convicts to be so well armed stands convicted of absolute inefficiency.

In the Michigan prison at Jackson the revolt was less successful and was not much more serious than a wholesale strike against work and against obedience to the prison rules. The strike was subdued by excessively severe methods, but without any loss of life.

Drugs and Gambling Among Prisoners.—At a convention of chiefs of police of the United States and Canada, held at Toronto, it was asserted that half the criminals of the country are drug habitués and that the spread of drug habits among both adults and children is so serious an evil that the federal Government should take steps to safeguard the importation and distribution of opium, cocaine and other drugs.

The traffic in drugs has assumed large proportions in the Southern Illinois penitentiary at Menard. The newly appointed chaplain is trying to suppress it.

To stop gambling among the prisoners in the Texas penitentiary, the warden has issued an order prohibiting prisoners from transferring the money which they place in the prison

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bank to other prisoners. Both cards and dice, although contraband, are secured by prisoners.

Miscellaneous Reform Movements.

—In the federal prison at Atlanta striped clothing has been abolished. A prison band and orchestra have been formed and concerts are given every Sunday. A prison baseball league has also been established. These things are made more feasible because the enormous wall of reinforced concrete, 30 feet high and inclosing 27½ acres of land has been completed.

The legislature of Alabama has created the position of prison inspector, and the man appointed has gone to work in a vigorous manner to clean up the jails, his powers under the law being very broad.

In California, extensive and thorough reforms are being made in the prisons, both as to physical equipment and the treatment of the prisoners. The working equipment is being increased by a plant for the manufacture of woolen and cotton cloth; this is in addition to the factories for clothing, shoes, tinware, beds, furniture and other supplies for the various state institutions.

The deputy solicitor-general of Fulton Co., Ga., desired to know by actual experience what the chain gang to which the men he prosecuted are often sent was really like. Accordingly he joined the gang in the guise of a prisoner, wore the stripes and swung a pick, no one but the head of the prison knowing his identity. He spent two days as a convict and his experiences are reported in the *Review* for May, 1912.

Acting under a law of the last session of the legislature, the Illinois State Charities Commission has established a Bureau of Criminal Statistics. This is said to be the first bureau of the kind in this country. The duty of the bureau is to collect and publish annually the statistics of Illinois relating to crime. It is made obligatory on all courts, magistrates and officers having charge of places of detention of persons convicted of or charged with crime, to furnish the bureau with such information and as it shall request.

A newly appointed associate super-

intendent at the Indiana reformatory is a psychologist. He is expected to introduce a system of psychological examinations of all new inmates.

Iowa proposes to establish a system of state workhouses to deal with vagrants, chronic inebriates, etc. These are to be located on large farms and the theory is advanced that they can be made self-supporting by the labor of the prisoners.

The reform administration in the Kansas penitentiary continues. It is declared that under the present management "men are seen to be more important than binding twine."

The legislature of Kentucky has enacted legislation providing for a visiting board to inspect and report the conditions and management of jails and police stations.

The New York State Board of Charities has established a bureau of statistics, with special reference to criminals and defectives.

North Carolina has abolished the prison striped clothing. The convicts wear their own clothing or a suit of brown cloth.

A new site for the Western Penitentiary of Pennsylvania contains 4,878 acres of fertile land, of which 936 acres is a state forest reservation. The site includes a magnificent water supply. The warden proposes to develop the property with the labor of the prisoners.

Rumors of grave abuse led to the investigation of the conditions and management of the city prison in Halifax, N. S. The result was that the city council was shocked into ordering very drastic reforms. The idea of the reformation of the delinquent has thus emerged in a practical form for the first time in Halifax.

The Arizona legislature took up a collection to enable a convict to go to Washington and secure a patent on an invention which he had perfected while in prison, after which he returned to prison to complete his sentence.

The board of city magistrates of Baltimore have been investigating the House of Correction. They report that it is solely penal and not corrective; that no efforts are made to reform any prisoner, that they are worked under contract and when

they fail to complete the task assigned them, are punished with the lash. The report lays stress on the fact that the officials of the House of Correction complain because the magistrates send many prisoners for terms so short that they are of no profit to the contractors. Following this report the Governor of Maryland attempted to secure the passage of a resolution by the managers of the House of Correction forbidding the use of the lash, but failed. He declares he will try again and, if he fails, again will appeal to the legislature for action.

Lynchings.—There have been 71 cases of lynching during 12 months in 18 different states. Of these 59 were of Negroes, one a Mexican. Of the whole number only 15 were for rape or attempted rape. During the same period of 12 months there were 72 legal executions in the United States. Two erroneous convictions with long imprisonment and no redress came to light during the year. Andrew Toth served 20 years in Pennsylvania, and George Ury served ten years in Ohio, in each case for a murder of which they were innocent.

New Penal Institutions.—The federal Government is building a special department, a prison within a prison, for the women convicts now scattered in state penitentiaries all over the country. This is at Leavenworth, Kan. The department will be in the exclusive charge of women officers. No male visitors will be allowed except near relatives of the convicts, and their visits will be much restricted.

A new plan of prison construction with circular buildings, giving better light and air than on any former plan, was shown at the Prison Association meeting and warmly commended by most of the prison men who saw it. It will be used at Joliet, Ill., in the new building there.

A legislative commission in Indiana will present a strong report in favor of a state workhouse on a large farm, and the total abolition of jail sentences. The present governor has put himself on record as in favor of the plan, and it will almost certainly be adopted by the legislature of 1913.

A state commission to investigate jails and workhouses in Iowa, recommends the abolition of jail sentences and the organization of a state colony farm for misdemeanants and those guilty of small felonies.

The reformatory for women in New Jersey is being equipped and received some prisoners during the year.

New York is to have a reformatory for young male misdemeanants of the class between those who may go to the Industrial Schools, and those eligible to Elmira. The need of this proposed institution has long been recognized.

New York is organizing a farm colony to be used instead of the workhouse for vagrants, misdemeanants and inebriates.

The commission in charge of the women's reformatory in Ohio has purchased a site containing 259 acres. Plans are being made for buildings to care for all classes of women misdemeanants over 16 years of age.

First steps have been taken toward a women's reformatory in Wisconsin.

PRISON LABOR

Progress of Humane Methods.—The trend toward more just and humane methods of convict labor, which has been apparent for a number of years, has been emphasized in 1912. Certain recent evidences, less in legislation than in practice, may be cited. In Arkansas the governor and some of the judges have tried to do away with the convict camp system, the governor by wholesale pardoning, the judges by committing offenders to the county farms. In Florida the legislature tried to abolish the lease system, but the governor vetoed the bill. Candidates for governor and the legislature are unanimous in promising to do away with the system at the next session.

The State-Use System.—Contract convict labor is under fire in many states. Missouri will take no more contracts and the state-use system goes into operation as the old contracts expire. The Ohio prison is now changing from contract to state use. In Texas the contract and lease systems have been abolished by the Prison Commission. Mismanagement

in New York has crippled the state-use system, which has not had a fair trial. This was the report of a state investigation committee. The state-use system has been adopted in whole or in part by some eight or ten states.

The Honor System.—In the state penitentiaries of Oregon, Nevada and Colorado, at the Central Prison of Ontario and in some county work-houses, among them that of Columbus, O., the honor system has been successfully used. This involves sending prisoners out in gangs, with foremen, but no armed guards, relying on their word not to attempt to escape, to work of various kinds, farming, road making, etc., in some instances many miles from the prison. The percentage of escapes has been no larger than under the old system. So far the results are reported as eminently satisfactory, especially in the improved mental attitude of the prisoners. In many other places extensive farms are now connected with houses of correction and even with jails.

In Oregon the plan is spoken of as the "governor's honor system." The present governor discovered a technical violation of the contract under which the convicts were employed and declared it forfeited. More than one-half the prison population are now employed outside the walls. The work has included building of state institutions at Salem, the capital, and road making.

In Nevada, under the honor system, the physical condition of the prison and of the convicts have been immensely improved. Many of the convicts work unguarded on a large farm. The success of the system in Nevada seems to inhere in the personal influence of the warden, who has convinced the men that he proposes to give them a square deal. At the same time strict discipline is maintained, but the effort is not to break the convict's spirit, but to foster and preserve it.

At the state reformatory in Michigan, the warden believes that a large proportion of the prisoners can be safely worked outside the walls. To a farm of 280 acres, 90 acres have been added this year. The value of

the crops from the added land have amounted to two-thirds of the purchase price. The warden estimated that he could make good use of 1,000 acres of fertile land.

The honor system has been used to a small extent with success at the Clinton and Great Meadows prisons in New York. The application of the system depends upon conditions and circumstances, especially upon the density of population. A plan that will work well in a sparsely settled western state may utterly fail if tried in thickly settled districts.

The president of the Ohio State Board of Administration declares that at least 300 prisoners will be put at work next summer outside the walls of the Ohio penitentiary. This is because the experiments tried this year, in taking men out and placing them on state farms or in quarries, have been largely satisfactory. (See "The Convict's Word of Honor," *Review*, May, 1912.)

Miscellaneous Movements and Legislation.—The American Institute of Criminal Law and Criminology held a conference, at which much attention was given to prison labor. Conclusions were reached in favor of compensation from the product of the prisoner's labor to his dependents, of the elimination of the lessee and of the abolition of the "slave system" by the payment of wages and the choice of occupations by the man in penal servitude.

A symposium on prison labor was held by the National Conference of Charities and Correction, a report of which appears in the *Proceedings*.

The National Consumers' League has created a new special committee on manufactures in prisons at the instigation of manufacturers who use the label of the League and find the competition of prison-made goods hurtful.

A state commission on prison labor reported against the contract system as economically unsound, destructive of discipline, preventive of reformation, and injurious alike to the prisoners and the free laborer outside.

A fine piece of road work by prisoners is under way in Kansas. Twenty-five prisoners under a fore-

man and one unarmed guard, are making a macadam road from Lansing to Kansas City. The men work ten hours a day and build a mile of road each month. They are on parole and during two months only one prisoner broke his parole. He was a mere boy, who got homesick and went to see his mother, returning voluntarily a few days later. The men wear ordinary citizens' clothing. The road is costing much less than a usual contract price.

The Massachusetts Supreme Court has recently, in a unanimous decision, declared that the proposed bill to require the branding of goods made in penal institutions would be unconstitutional if passed by the legislature.

Michigan has a law authorizing the employment of prisoners on the roads. Some recent experiments under this law have turned out well, but in many localities public opinion is so strongly against such labor that the plan has not been used very largely.

Convicts in Mississippi are engaged in building levees in different sections of the state. The largest number away from the state camp in any one place are a hundred men who are working at the Torras Crevasse.

By an act abolishing the present system of convict labor at the termination of the existing state prison contracts, all convict labor in the state and county prisons in New Jersey may be employed in the manufacture of articles for use in the institutions of the state and its subdivisions. The convicts are to be employed for nine hours daily except on Sundays and public holidays. They may be employed in the construction or repair of prison institutions, and the labor of the convicts must be so directed as to produce "the greatest amount of actual product of articles and supplies" for all state and local institutions, the buildings and departments or offices of the state, "or in any public institution or department owned, managed and controlled by the state or public subdivision thereof." Convicts may be employed in agriculture, horticulture, and floriculture, and "all surplus product of this convict labor is to be disposed

of at public sale to the highest bidder." The new law extends the prison-labor system from the state prison to all county prisons, and makes city and county departments, offices and institutions, as well as the state institutions, its beneficiaries. The sum of 50 cents a day is to be paid to the families of the convicts. The present contracts expire in 1913 and 1914 and a Convict Labor Commission is at work on a plan for employing convicts on public roads, in forestry and otherwise on state account.

The new Board of Control and Supply created by the last general assembly of Rhode Island, has decided that the profit-sharing plan of prison labor in force at the state prison at Howard is illegal and has ordered its discontinuance. The plan was put into effect by a new warden about one year ago, and as a result many of the prisoners have been able to save a considerable sum of money.

A contract for making shirts for thirty cents per dozen, in the Rhode Island penitentiary, has been abrogated by the governor, who thinks he can save the state \$150,000 in the term the contract had to run. However, he proposes that the board shall make a new contract, giving it to the highest bidder, instead of, as was the case with the contract abrogated, to the lowest bidder. There is a demand for an entire reorganization of the methods in the prison and a new board of managers has begun by asking for the resignation of the warden.

The governor of Texas believes that the prisoners of that state, in which contract labor has been abolished, can be made to earn dividends by work on the state account plan. Among the kinds of labor he proposes to use will be that of running an iron smelter.

PROBATION, PAROLE, AND PARDON

Probation.—The City Court of Buffalo has published a booklet containing a set of probation rules referring to every subject from the matter of court records to the supervision of probationers. The privilege of making statements to newspapers on the

work of the court is reserved to the chief probation officers. The present status of probation is summarized by Frank E. Wade in the *Review* for September, 1912.

The probationary treatment of men guilty of non-support of family was one of the subjects considered at the National Conference of Charities and Correction. The successful method employed in Buffalo by the chief probation officer and his associates are told in a paper on that subject, which is of very high value as indicating the true method with this class of offenders. The paper and others of similar import, will be found in the *Proceedings of the 39th National Conference of Charities and Correction*.

The fifth New York State Conference of Probation Officers had a varied programme referring to both juvenile and adult probation, including such subjects as feeble-minded delinquents, probation association, special problems of women probation officers, and other vital topics.

Parole in New York State goes slowly, chiefly because of the lack of sufficient parole officers. The plan of using the probation officers appointed by the courts in the various counties to act as parole officers from the prisons and the reformatory was urged by the secretary of the State Probation Commission at the State Conference of Charities.

The California State Board of Prison Directors has adopted a plan of parole which will very greatly enlarge the number so treated. Among other things, efforts will be made to secure employment for all men whose sentences are about expiring, in which case he will go out on parole instead of on expiration of sentence. This may seem like a distinction without a difference, but those versed in dealing with prisons know that the difference is vital.

A special committee of the American Institute of Criminal Law and Criminology has prepared suggestions for a workable and adequate law for the administration of the indeterminate sentence and parole. While criticism of the indeterminate sentence appears at times, the committee believes it is due to misunderstandings

or administrative errors or failures. The committee's report is published in the March, 1912, issue of the *Journal of Criminal Law and Criminology*.

Pardon.—Some interesting examples of wholesale pardoning (1,400 from one state prison by one governor during his term, an assertion by another governor that 500 ought to be released), by governors of southern states, are given in the *Review*, Vol. II, as a basis of an argument in favor of placing the pardoning power in a special non-partisan board, such as that of the state of Connecticut.

PRISONERS' AID

In California the Mutual Aid and Employment Bureau and Prisoners' Aid Society has been organized with headquarters in San Francisco.

The work of the Salvation Army in Canadian prisons and with ex-prisoners receives the praise of the wardens and other government officials. The work is now carried on in 75 jails and prisons of that country. The Army has the hearty coöperation of mayors, magistrates, courts and penal authorities. In the Kingston prison alone, over 6,000 prisoners have passed through the hands of the Army in 12 years. Furnishing employment is a large branch of the work. In Toronto work is found for about 720 each year. In Winnipeg \$50,000 and six acres of land have been given the Army to provide a home for juvenile offenders. The warden of the Central Prison at Toronto declares that "fifteen years' experience in dealing with 10,000 delinquents leads me to regard the Salvation Army as one of the greatest influences in the work of prison reform."

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CHARITY

PUBLIC SUPERVISION

In Kansas state subsidies to private charities are now given through the Board of Control, a lump sum being appropriated which the Board divides according to work done. Charitable societies desiring to solicit funds in more than one county must have a certificate from the Board of Control.

In Louisiana an inspector of asylums, almshouses, etc., has been appointed.

Consolidation of boards of trustees of state institutions in Maine was intended as a harmless concession to the popular demand for a state board of charity, but it has not lessened the need of such a board nor quieted the demand for it.

In Michigan the supervision of the State Board of Charities over maternity hospitals, the appointment of county agents and probation officers, under recent laws, is leading to greatly improved administration.

In Missouri, under the direction of the State Board of Charities, a thorough inspection is being made of all county jails and almshouses.

The New Hampshire State Board of Health is giving wide circulation to the law for the prevention of ophthalmia neonatorum.

Relief to windows from public funds administered, in part, by private agencies, was recommended by a committee of the New York State Conference of Charities and approved by the Conference.

The third legislature of Oklahoma greatly enlarged the power of the commissioner of charities in regard to orphan children. (See *Child Welfare*, *supra*.)

A small step has been taken in Pennsylvania toward the abatement of the excessive subsidies by the state to private charitable agencies, by the enactment of a law forbidding any subsidy to any unincorporated association formed after the passage of the act. A companion bill that unfortunately failed of passage, required an investigation by and a permit from the Board of State Charities as a condition of incorporation.

Rhode Island has created a board of control of the state institutions which attend chiefly to purchase of supplies, construction of buildings and other personal matters. The Board of State Charities remains as a visiting and advisory board, with power to make reports to the general assembly.

Cincinnati has a new charities commission with a superintendent of charities and corrections having charge of the hospitals, infirmary, house of refuge and house of correction. The first superintendent is an expert in hygiene and in civic affairs. The Cincinnati out-door relief department has been abolished and out-door relief is now granted on the recommendation of the Associated Charities.

Philadelphia is reorganizing its charitable institutions, with a spirited director who has a highly trained and experienced social worker as first assistant; a conference of social workers was held to assist in the formation of a comprehensive plan; a citizens' committee on municipal charities also assists.

In Spokane, Wash., the mayor has appointed a municipal charities commission (unpaid) which examines private charities and indorses those approved.

PUBLIC RELIEF

A special investigation of poor relief was carried on in Monmouth Co., N. J., under direction of the State Charities Aid Association. The investigators secured full coöperation with the relief officers. The defects of the system discovered were chiefly those of inadequate investigation and lack of coöperation with private relief agencies. A report of the investigation, which is an extremely valuable document both for New Jersey counties and other places, was published in the *New Jersey Review of Charities and Correction* for March, 1912.

The new poor law of New Jersey is the modern application of neighborly helpfulness. The gist of it is given in the *New Jersey Review* for May,

1912. The new law requires so much more attention and knowledge on the part of the overseers of the poor, than the laws it has supplanted, that they have formed a conference of overseers, to study and discuss it and for mutual helpfulness.

In several cities of Ohio, among them Cincinnati, Hamilton, Akron and Toledo, the city out-door relief is being administered either by the Associated Charities directly or in a very close cooperation with that agency.

In Rhode Island an act gives the State Probation Committee \$2,500 to be used for the relief of families when the husband is in jail for non-support.

Up to the present year St. Louis has had no public out-door relief. A new municipal law creating a board of children's guardians allows this board to pension widows with small children.

THE INSANE

New pathological laboratories, reception hospitals and psychopathic departments are being equipped in many states, usually in connection with the existing hospitals.

The National Committee on Mental Hygiene announces a gift of \$50,000 and \$50,000 more to follow when \$200,000 is raised.

In Illinois the State took over the Cook County Asylum, with 3,000 patients, thus completing the state care of the insane.

The colony plan for chronic insane in connection with the state hospitals has been begun in Indiana; an appropriation for the purpose has been available for more than a year without being used until recently.

Kansas is building a new hospital for the dangerous insane.

In Maryland a loan of \$800,000 has been authorized to complete the state care of insane.

In Minnesota the new detention hospitals with voluntary or self-commitment are working well.

After-care of the insane is reported from one city in Missouri. A director for nurse-training schools for the four hospitals for insane in Missouri has been appointed.

The committee on mental hygiene of the New York State Charities Aid Association is increasing the scope of its activities by undertaking on a larger scale medical social-service work with incipient mental cases. A dispensary for nervousness and mental diseases has been opened in cooperation with the Manhattan and Central Islip state hospitals. Patients will be sent by social workers or visiting nurses or will be referred by the Nurses Settlement, which is close to the clinic on Henry Street. In addition to incipient new cases, it is expected to have many of the paroled convalescents from the hospitals report to the dispensary during the period of their parole. The committee is also establishing a bureau of information on the causes, prevention and treatment of insanity, and will furnish promptly upon application from any part of New York State advice in cases of mental trouble, on securing examinations, directing to hospitals and other agencies, etc.

In New York the "Commission in Lunacy" has been replaced by the "State Hospital Commission."

In Ohio arrangements are made for voluntary consultations in mental trouble, a sort of out-patient department in connection with the state hospitals.

Two new hospitals, one of them for the criminal insane, opened in Pennsylvania in the autumn of 1912.

In South Carolina preparations are making to move all the insane out into county colonies.

A Psychopathic Parole Society was recently organized in Los Angeles to assist and provide employment for women who are paroled from the Hospital for Insane.

New Orleans has now a public hospital for the insane.

Alcoholism and Insanity.—The average proportion of insanity which is the result of alcoholism is usually found to be 25 per cent. of the new cases. In New York State it is about 28.9 per cent. In Kansas, of all cases, about five per cent. are due to alcoholism. The Board of Control of Kansas claims that this small proportion of alcoholic cases is due to the prohibition laws, which are vig-

ously enforced except along the borders of the state and in a few of the larger towns.

THE FEEBLE-MINDED AND EPILEPTIC

Because of the many similarities in their history and condition, from cause to treatment, and because a great many individuals belong to both classes, these two types of defectives are often kept together in the same institution. Of the institutions for the care of the feeble-minded in this country, more than half receive epileptics also. The most notable record with regard to these classes is the widespread inquiry into the causes of the defects, and the attempts to avert them. (See also *Prevention of Defectiveness, supra.*)

Connecticut has opened a new hospital for epileptics.

Colorado has opened its institution for defectives.

In Idaho the legislature made an initial appropriation for a state school for the feeble-minded and epileptics.

Massachusetts provided for the enlargement of the second state institution for the feeble-minded. About 200 more inmates will be received.

A census of feeble-minded and epileptics in New Jersey finds a total of 6,063, of whom 911 are in institutions planned for their care, 740 in other institutions and 4,412 at large.

North Carolina has located the state school for feeble-minded on a tract of 1,000 acres of land. The school is now building.

In Pennsylvania the state has given to the city of Philadelphia, the sum of \$200,000 toward the cost of a building for the feeble-minded and idiotic of the city.

Virginia has begun the care of the feeble-minded by an initial appropriation for an institution for feeble-minded women.

VOLUNTARY AGENCIES OF CHARITY

In Indiana a state federation of charity organization societies has been formed.

A Public Welfare League with the purpose of coördinating the various public and private agencies for social welfare has been formed in Kansas.

A state association for the blind has been formed in New Jersey.

In Rhode Island are two instances of charity organization societies covering groups of small towns.

In Baltimore the Social Service Corporation is the application of the trust system to a group of philanthropies.

The Brooklyn Bureau of Charities has created a department of social betterment to give special attention to prevention and education work.

A settlement house for blind people has been established in New York City, the second of its kind in this country, the first being in Cambridge, Mass.

A central bureau for educational and philanthropic work has been organized by the yearly meeting of Friends in Philadelphia.

At Pittsburgh a Federation of Jewish Charities has been formed.

In Portland, Me., the Buffalo system of church districts for charity work in coöperation with the Associated Charities has been adopted.

In St. Louis a citizens' relief committee, organized during zero weather, collected a vast quantity of clothing and bedding and a considerable sum in cash. The attempt at rapid distribution showed the error of attempting relief of the kind in so large a city. It was necessary for the committee to call on the organized associations for help.

Seattle has a newly organized council of social agencies, with a view to the probable consequences which will follow the increase of immigration which is expected when the Panama Canal opens.

In Washington the Associated Charities are branching out in new lines of social work, such as day nurseries and tuberculosis sanatoria, etc.

The "Society for the Welfare of the Jewish Deaf" is announced.

Associated Charities newly organized are reported from cities in the states following: Arkansas, three cities; Florida, three cities; Indiana, two cities; Nebraska, two cities; North Carolina, two cities; South

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Carolina, four cities; many others have not been reported.

The Central Council of Social Agencies is a method designed to carry out more fully the idea of associated effort which underlies the older associated charities, but which, in many of them, has been subordinated to relief work or, at least, to effort at the rehabilitation of individual families. Councils of the kind established in 1912, or so late in 1911 that their operations have been in 1912, are reported from St. Louis, Mo., Youngstown, O., and Portland, Ore.; similar associations have been formed in many smaller cities.

The Red Cross has conducted a very extensive relief to the sufferers from the floods of the Mississippi. The relief has included rehabilitation of houses and of farming, food for the sufferers and their animals, seed for planting, etc. The number of persons requiring temporary help in the form of food and shelter was 250,000, and the number for whom further help was needed in the form of seeds for planting, repairs to buildings and fences, furniture, clothing, farm implements and so on, was about 50,000. All through the time of suspense while the people waited for the water to go down, and during the periods of feverish activity when the planting for the year must be crowded into a few hours or days, the relief committees and the Red Cross were ready with supplies of seeds. Shipments were hurried from North Carolina and other states which raise a specially quick growing variety of cotton. The two chief centers of distribution were Baton Rouge, La., and Natchez, Miss., where active committees of business men who fully understood the needs were in charge. With these committees the Red Cross was in the closest affiliation.

A feasible plan to abolish mendicancy is in operation in Baltimore. It includes a complete coöperation of charitable agencies and a sufficient number of plain-clothes men from the police force, detailed as mendicancy officers. The beggar is not arrested on sight, but warned by the officer who sees him begging, and conducted to his home. Then his circumstances are inquired into by the Federated

Charities, the Federation of Jewish Charities or the St. Vincent de Paul Society as the case may be, and if there is real distress, action is taken. If the mendicant is caught a second time the officer arrests him and the proper society appears as a witness against him. In the case of a vagrant, the officer has no alternative but to arrest. Even then the societies have an opportunity to do what they can in practical help. The last resort in every case is the workhouse.

An interesting outcome of the first state conference of charities in Arkansas was a vigorous growth of societies for charity organization in a number of the larger cities of the state. It is claimed that every city of 10,000 population or more, either has or shortly will have its Associated Charities with a paid executive.

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PREVENTION OF TUBERCULOSIS

Associations and Conferences.—The National Association for the Study and Prevention of Tuberculosis, showed the year's trend in prevention; the central thought that ran through all the discussions was the need of adequate provision for every case.

The National Association asked 100,000 churches in the United States to unite on Tuberculosis Sunday, Oct. 27, to give attention to the disease by which the churches, last year, lost 52,000 communicants.

A Conference of Southwestern States on Tuberculosis considered ways and means to discourage the immigration of people afflicted with tuberculosis into that part of the country.

It is reported that the annual cost in the United States of the efforts

XVIII. PREVENTION, CORRECTION, AND CHARITY

to control and prevent tuberculosis is, by public expenditure \$9,606,000; by private agencies, \$4,977,500; total, \$14,585,500.

Agencies for Care and Prevention.

—The general attention now being given to the care and prevention, the new laws and new agencies, etc., will be seen in the following reports on the subject from a large number of states of the occurrences of the year (see also XXX, *Public Health and Hygiene*):

Alabama.—Work for the prevention of tuberculosis is being developed in Birmingham and has been begun in Mobile, Tuscaloosa and Montgomery.

Arkansas has a newly formed active state association and some inactive local associations.

Colorado.—The Colorado Association for the Prevention and Control of Tuberculosis has been reorganized under the name of the Rocky Mountain Public Health Association.

The Colorado State Board of Charities is giving very wide circulation to a movement intended to deter indigent tubercular patients from coming, and their friends, as well as public officials and private charity societies, from sending such patients, to Colorado. The local charity societies are overwhelmed with applications for help from such people. Even those in the early stages of the disease are unable to find employment. The circular declares that as Colorado is the paradise for consumptives who have means to give them proper care, it is the purgatory of the homeless, penniless, workless consumptive.

Delaware.—The Delaware State Commission is having all houses infested with tuberculosis throughout the state fumigated, and the Wilmington Board of Health is giving special care to homes so affected.

Indiana.—The Indiana Association for the Study and Prevention of Tuberculosis has been organized. Its plans include a representative in each of the 1,016 townships.

Kansas.—This legislature appropriated \$50,000 for the establishment of a state tubercular sanatorium, which is to be located by the board of control upon the advice and rec-

ommendation of an advisory commission appointed by the governor.

Kentucky.—A bill created a state commission on tuberculosis with an appropriation of \$15,000 annually. The commission maintains a traveling exhibit in charge of a competent lecturer who visits all parts of the state which are accessible by railroad.

Louisiana.—Attempts are being made to secure a hospital for incipient tuberculosis. The only hospital now is for advanced cases.

Maine.—The Maine Anti-Tuberculosis Association is now supplemented by local associations in Portland, Lewiston, Bangor and Waterville. Associations are in process of organization in Biddeford, Saco, Gardiner and Augusta. Besides the sanatorium at Hebron there is also a small sanatorium open during the summer months at Fairfield. Portland and Bangor are conducting day camps. It is proposed to organize active local associations in every town or union of towns of 10,000 or over, and tuberculosis committees in smaller towns.

Maryland.—The legislature of this year authorized a state loan of \$100,000 to complete the tuberculosis sanatorium.

Minnesota.—The City Hospital Board of St. Paul will take over the private tuberculosis sanatorium Jan. 1, 1913. Nine counties in the state have voted sums ranging from \$100 to \$600 for visiting county nurses in the home of consumptives. In one township in one of these counties a house-to-house canvass and a complete study of the prevalence of the disease was made by the nurse, and a specialist sent by the state and the tuberculosis society.

Minneapolis has an open-air school for tubercular children established by the joint action of the Board of Education, the Visiting Nurses Committee, the Associated Charities and an anti-tubercular committee. The state Department of Instruction is co-operating with Anti-Tuberculosis Association in lectures on sanitation, etc.

Missouri.—A movement is on foot to establish county tuberculosis hospitals in a few counties as result of

permissory law passed by last general assembly. Plans are practically complete for first one in Cole Co. The Missouri Association for Prevention and Control of Tuberculosis has been reorganized and is under expert direction.

Nebraska.—The last legislature provided for a hospital for indigent tubercular patients; the location and management are by the state Board of Public Lands and Buildings.

New Hampshire.—The state Board of Health of New Hampshire reported 625 cases of tuberculosis registered in the state office May 1, 1912, under the law of 1911, providing for the registration of all classes of tuberculosis.

New Jersey has started on a great campaign for public health and comfort by enacting laws as follows:

County hospitals for tubercular disease, with full details covering finances, buildings, management, admissions and methods, are now authorized. When established in connection with a county almshouse, a separate board of managers shall be appointed. These hospitals are to be under the regulation of the state Board of Health. The state is required to expend \$3.00 per week for each patient. Each county must contract for the care of tuberculosis inhabitants with some private or municipal hospital, when not maintaining its own; and the State Board of Health is empowered to enforce this provision of the law. Two or more counties may join for the purpose of this law. All hospitals must report immediately all cases of communicable disease to the local board of health, setting forth the exact place of residence of the patient, under penalty of \$50. Segregation of patients is made compulsory.

New York.—An experiment is being tried in the home treatment of tubercular families. The first case consists of the parents and seven children. Apartments in a model tenement house are secured for the families, a section of the house being leased for the purpose. The physician calls daily. Members of the families

who are able to work contribute their earnings. Tubercular children have a special open-air school, others go to the public school. A trained nurse lives in the house. The purpose of the experiment is to test the possibility of treating the disease in a sanitary tenement in a crowded city.

North Carolina.—County sanatoria have been established in New Hanover and Cumberland Counties for tuberculosis cases. District nurses are employed in Raleigh, Asheville, Wilmington, Charlotte and possibly other cities. The Nurses' Association has become interested in social work and has made some investigations as to what the members of their profession are doing for the general uplift. They have established a small home at Black Mountain for the care of nurses who have contracted tuberculosis.

Pennsylvania.—The State Board of Health has in charge some 1,200 tuberculosis patients. Two new colonies are nearly ready.

Rhode Island.—Anti-tuberculosis associations have been formed during the past year in the towns of Bristol, Charlestown, Richmond and Hopkinton.

Texas has just built and equipped a state sanatorium for tuberculosis.

Washington.—The tuberculosis sanatorium of Spokane is operated by the Associated Charities. Tacoma has recently organized an anti-tuberculosis society. The Anti-Tuberculosis League of King Co., Seattle, is a private association, the work of which is being rapidly assumed by the municipality.

Nova Scotia.—Municipalities have been empowered to erect municipal sanatoria for the treatment of tuberculosis. The Halifax County Anti-Tuberculosis Society is about to build a home for advanced cases.

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XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

AGRICULTURE

E. W. ALLEN

Development of Agriculture in the United States.—The year 1912 marked the anniversary of three highly important events in American agriculture: the semi-centennial of the establishment of the federal Department of Agriculture at Washington, and of the act donating public lands for agricultural education, and the quarter-centennial of the passage of the act providing for a federal system of agricultural experiment stations. The federal Department of Agriculture was provided for by an act signed May 15, 1862, "to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word." For that year it had an appropriation of \$64,000, and a small number of officials and clerks, who gave their attention mainly to the propagation and distribution of seeds and plants. In 1912 the Department's appropriation was \$16,900,016, and its working force numbered nearly 13,000 persons, including experts in every branch of agriculture, in addition to a corps of thousands of correspondents throughout the country reporting on the area and condition of crops, on which its statistics are made up.

The Morrill Act, which appropriated immense areas of the public domain for the maintenance of state institutions in which the teaching of agriculture was to be a leading subject, was passed July 2, 1862, and marked the beginning of the agricultural college movement in the United States. The act establishing experi-

ment stations in each state and territory in connection with the agricultural colleges, known as the Hatch Act, was passed March 2, 1887, and was the culmination of several years of effort in that direction. At the time of its passage there were 17 stations maintained by the states. There are now stations in every state and territory, including Alaska, Hawaii, Porto Rico, and the Island of Guam, which received from the federal and state governments in 1911 a total of \$3,615,425, and employed about 1,600 persons in the work of administration and research.

Crop Conditions.—The season of 1912 was late over many sections, many crops requiring replanting and others being retarded in their early development. These conditions, however, were offset by more favorable conditions later in the season, the months of July and August especially being decidedly favorable for crop development. On Sept. 1 the composite condition of all crops was 16½ per cent. better than at the same time in 1911, and four per cent. better than the average on Sept. 1 of recent years.

Taking into account both the acreage and the yield of crops, the indications as issued by the Bureau of Statistics of the Department of Agriculture in November were for a production of corn exceeding three billion bushels, the largest crop ever raised in the United States. The wheat crop of over 720,000,000 bushels has been exceeded several times, but oats with over 1,400,000,000 bush., barley with nearly 225,000,000 bush. and rye with over 35,000,000, surpassed all pre-

vious records of production. The crop of potatoes, 414,000,000 bush., was much the largest ever produced in this country, and the tobacco crop, while not a record for yield, was much above the average. Hay was one of the products showing the effect of the early season, but the crop was one of the largest ever grown.

The severe weather and heavy snows of the winter and spring resulted in heavy losses of stock in the West, the Wyoming State Immigration Commission estimating the loss in that state alone at \$11,000,000. In many instances entire herds of cattle were wiped out, and every section of the state reported heavy losses of sheep. Stock in Colorado and western Kansas also suffered heavily. In July, wool buyers placed the shortage in the domestic clip at all the way from 20 to 30 million pounds.

Department of Agriculture.—The appropriation made by Congress for the federal Department of Agriculture for the fiscal year 1913 provides an aggregate of \$16,651,496, exceeding that of any year except 1912, which was slightly larger.

The act carries considerable new legislation. It calls for the segregation of lands lying within the boundaries of the forest reserves which are found to be suitable for farming, and the opening of these lands to settlement (see X, *Public Lands*). The proportion of the proceeds from the National Forests to be expended for public schools and roads is increased from 25 to 35 per cent. The sanitary provisions of the meat-inspection act are extended to include renovated butter factories; and experiments in breeding horses for military purposes and studies of the rearing of fur-bearing animals are authorized. Provision is made for determining the cost of food at the farm and to the consumer, and also for collecting information as to the coöperative and other systems of marketing farm products in this country. Authority for continuing the purchase of lands for the Appalachian Forest Reserve is continued, any unexpended balances being made available until spent, and an appropriation is made for the maintenance of lands already

acquired (see *AMERICAN YEAR BOOK*, 1911, p. 423). The continued spread of the chestnut-bark disease led to an increase of the fund for its control from \$5,000 in 1912 to \$80,000 for 1913 (see *Forestry, infra*). The coöperative demonstration work in the South was provided with an appropriation of \$332,960, and in addition \$300,000 was granted to another branch of the Department for work in farm management and farm demonstration. This will enable the demonstration features of the Department's activities to be greatly extended. These will be conducted quite largely in coöperation with local agencies, thus enabling more to be accomplished. The investigation of the sources of natural fertilizers, especially potash, was continued with an increased appropriation (see XXVI, *Agricultural Chemistry*); and the campaign against the Texas cattle tick in the South, in coöperation with the states, was given an appropriation of \$250,000, as the previous year.

The largest allotment of funds to any one bureau was, as usual, to the Forest Service, \$5,343,045. The total appropriation of the Weather Bureau is \$1,619,680; the Bureau of Animal Industry \$1,670,316, exclusive of the permanent appropriation of \$3,000,000 per annum for meat inspection; the Bureau of Plant Industry \$2,061,686; the Bureau of Chemistry \$968,940; the Bureau of Soils \$301,420, including \$165,000 for soil surveys; the Bureau of Entomology \$672,340, with provision for a campaign against the dreaded Mediterranean fly; and the Office of Experiment Stations \$1,871,700, including the federal contribution to the maintenance of experiment stations. The appropriation for the Department printing and binding, carried in another act, is \$475,000; and an act passed during the year providing for the federal inspection of imported nursery stock under the Department carries an appropriation of \$25,000.

Dr. H. W. Wiley, for many years chief of the Bureau of Chemistry and in charge of the execution of the pure-food law, resigned in March. This followed the report of a Con-

gressional investigation highly commending his zeal in behalf of pure food. He was succeeded in December by Dr. Carl L. Alsberg.

Experiment Stations.—The extent of the present provision made for the agricultural colleges and experiment stations in the way of equipment and maintenance is illustrated by the New York State appropriations to the agricultural college at Cornell University. The legislature appropriated an aggregate of \$907,000, of which \$90,000 is for a new building for poultry husbandry, \$91,000 for an animal-husbandry laboratory, \$38,000 for a live-stock judging pavilion, and \$100,000 for an agronomy extension to the present main building. The college was also granted \$285,000 for current expenses and \$50,000 for extension work, with additional items for special purposes aggregating \$87,000. The 1912 legislature in Kentucky voted a permanent annual appropriation of \$50,000 for the experiment station and extension work, duplicating the amount for the university, including the college of agriculture. A series of 12 experimental and demonstration farms of about 20 acres each have been authorized by the Board of Control of the station. Massachusetts appropriated a quarter of a million dollars for the year for the maintenance of its agricultural college and experiment station.

Four additional experimental fields have been authorized in Missouri, and a new demonstration farm has been provided in Minnesota by the purchase of a 240-acre tract near Duluth, to carry on work in dairying and truck farming, and to conduct a 20-acre combination poultry, orchard, and small-fruit farm. In Nebraska a 160-acre farm has been purchased at Culbertson for demonstration purposes, a portion to be used for dry farming and the remainder for cropping under irrigation; and Idaho has established a demonstration farm for dry farming at Aberdeen in the southeastern part of the state. A system of ten branch stations has been organized in Texas under the direction of the college station, to conduct local experiments and demonstrations in typical regions of the state. Under a recent

state appropriation, four experimental orchards have been established in Virginia, in representative sections. Two district stations for experimental work with field crops have also been provided, and experimental work in tobacco growing is conducted at five localities.

The last Wisconsin legislature provided for county demonstration farms in coöperation with the localities, under the direction of the experiment station. The Ohio Experiment Station has assumed management of a tract of nearly 1,700 acres held jointly by the institution for the feeble-minded and the state penitentiary. The tract will be operated as a demonstration farm. The station is also furnishing advice to several other state institutions on the management of their farms and dairy herds. An interesting departure is the starting of a substation for Ceara rubber in Hawaii. This is located in the Nahiku rubber district in Maui. The work has been very successful. Rubber of a high quality has been produced, only ten per cent. below Para rubber. The expensive labor seems to be the greatest drawback to the industry. The experiments have been mostly in tapping and coagulating, and also in growing awa (*Piper methysticum*), a medicinal plant, as an intercrop between the rubber trees.

The live-stock experiments in Alaska were seriously interfered with by the volcanic eruption of Katmai (see XXV, *Earthquakes and Volcanoes*), which covered the pastures at Kodiak with ashes 12 to 18 in. deep early in the season. About 100 head of Galloway cattle and 50 head of sheep were being carried on these pastures, and fed during the winter on grass cut from the meadows. The destruction of the vegetation made it necessary to remove the cattle temporarily to pastures in the state of Washington, thus interrupting an interesting experiment which had been successful up to that time.

Dr. Thomas F. Hunt, dean of agriculture in Pennsylvania State College and director of the station, has been appointed to a similar position in the University of California. The latter institution has recently com-

pleted a fine agricultural building, at a cost of about \$200,000. Additions to the staff of the college and station are planned, and it is expected considerably to strengthen and develop the agricultural work in the state in the near future.

Graduate School of Agriculture.—The fifth session of the Graduate School of Agriculture was held at the Michigan Agricultural College at Lansing in July under the auspices of the Association of American Agricultural Colleges and Experiment Stations, with Dr. A. C. True as dean. It brought together about 300 persons, including a faculty of 48, three of whom were from abroad. Lectures, seminars, and conferences were held on soils, agronomy, plant and animal physiology, horticulture, beef and dairy cattle, swine and poultry, rural engineering, and rural economics, including farm management.

Extension Work.—In the development of our agriculture, attention is being focused especially on the rapid spread of the movement for popular education and extension in agriculture. Extension work is passing through an experimental and formative period. Experience is showing the great need of well-directed leadership, in order that the great movement under way may be efficiently organized and guided in right channels.

The present development of extension work is shown by the fact that some form of organization for extension teaching in agriculture has been provided in 43 states, with extension directors in charge. In 27 states there were, in 1911, 109 men devoting all of their time to that work, and in other states nearly 300 giving it a part of their time. For the college year 1911-12 there was appropriated \$584,175 for this work in 37 states.

Agricultural trains have continued to be operated extensively in all parts of the country, and serve to bring the institutions into direct contact with thousands of persons not otherwise reached. The present tendency is to make longer stops than formerly, and often to cover a wider territory.

Movable schools for the instruc-

tion of farmers and their families are assuming greater importance yearly, and are rapidly being extended. Farmers' Week has become an established function at many of the agricultural colleges. Special exercises for the interest and information of practical farmers are arranged, and the courses are attracting increasingly large numbers of men, who go away enthusiastic over the experience and the insight they have been given. The attendance the past winter taxed the capacity of the institutions to their utmost in some states. In Massachusetts and Wisconsin, for example, the attendance was over 1,200. (See also *Agricultural Legislation, infra.*)

Farm Bureaus.—An interesting development of the extension enterprise is the establishment of farm bureaus, in charge of agricultural experts, for the purpose of promoting and directing the agricultural welfare of the county or locality. These field agents have also been designated as "county representatives" or "county administration men." They are usually sent out from the colleges, and are to a certain extent under their supervision. In some cases the counties have been found willing to bear the whole expense of their maintenance, in others state funds are being used, and in not a few cases the federal Department of Agriculture is co-operating. In Canada the plan is in successful operation, and in Alabama the system is quite completely organized, with an agent in every county, and sometimes two, who devote themselves fully to the agricultural work of their counties. The colleges in Missouri and Wisconsin have located several of these men to act as middlemen between the colleges and the communities. In De Kalb Co., Ill., a soil improvement association was organized, which employed as "agricultural commissioner" a professor from the state university, raising a guaranty fund of \$10,000 from among the farmers, bankers and other interests to finance the undertaking for the year. The county board of supervisors has contributed \$2,000 and has authorized the use of the county farm, where, as well as on private farms, field demonstra-

tions will be conducted with a view to developing permanently profitable systems of agriculture. A county farm bureau was organized in Jefferson Co., N. Y., in the spring of 1912, an amendment to the county laws being secured in the state legislature permitting the supervisors to appropriate funds for such a purpose. The federal Department of Agriculture and the state college of agriculture are coöperating with the county, and the New York Central Railroad has made a contribution and furnishes the manager of the bureau with transportation. Oswego Co., N. Y., has taken a similar step. A farm bureau has also been established by the Binghamton, N. Y., Chamber of Commerce, to be conducted with the coöperation of the state college of agriculture. A farm survey and a cow-testing association are planned. The above list is by no means exhaustive, but shows the character and the variety of this new type of local agency.

Interest of Business Men in Agriculture.—Over 200 delegates representing the agricultural committees of the bankers' associations of 22 states met in Minneapolis Aug. 7-8 for the discussion of measures for agricultural improvement and agricultural education. The importance of greater efficiency on the part of the farmers was urged, and a resolution was adopted in favor of carrying the gospel of efficiency to farmers and their wives, and of providing for instruction in agriculture in the common schools. The state committee from North Dakota reported financing the better farming association to the extent of \$45,000, contributing \$5,000 for farmers' institutes in the absence of state appropriations, and \$5,000 for holding local corn-growing contests, in which over 11,000 men and boys participated. This committee was awarded a silver trophy for its efforts.

About three-fourths of the mileage of the railroads in the United States is said to be operated by companies which are making organized efforts to promote the agricultural development of their territory. In addition to exploitation and efforts to attract new settlers to the land, they are

conducting educational features for the benefit of the farmers, employing agricultural experts, and publishing and distributing literature. The past season, when there were several outbreaks of a new horse disease and of potato diseases in Nebraska, Colorado, and Kansas, the railroads sent experts into the field to help solve the troubles and aid the farmers. Naturally this action is not disinterested, as is suggested by the falling off in shipment of potatoes from one section of Colorado from about 10,000 carloads to less than 1,000 last year, but it illustrates a relatively new attitude of coöperation.

During the year Sears, Roebuck & Co., of Chicago, donated \$1,000,000 for the promotion of farm demonstration work. The plan contemplates the employment of an expert to advise and demonstrate in each of 100 counties, to be selected in various states, upon terms involving an active responsible interest on the part of the communities.

In the interest of settling people on the land, Montfiore G. Kahn, of New York, has given for perpetual use 13,000 acres of land in New Jersey to be let rent free, in ten-acre lots, to immigrants who come from foreign rural communities.

Land Booming.—The syndicating of various agricultural enterprises, numerous schemes for selling small tracts of land set out in fruit or other crops to inexperienced non-resident purchasers, and similar plans based on the present popular interest in agriculture, have found a large number of victims. In the Pacific Northwest a reaction has set in from too much booming and misrepresentation in land sales. The responsible organs of labor and capital have sent notices to the newspapers and to the governors of other states asking people to stay away unless they have money. Some of the speculative failures have run into millions of dollars, and new settlers have in some instances lost all their possessions.

Scandal growing out of the sale of Everglades lands in Florida, which the state is engaged in draining under a plan worked out by the U. S. Department of Agriculture, led to a

lengthy investigation of the Department by a Congressional committee, based on the charge that information of public interest had been suppressed by the Department. The misrepresentation of dealers in this land, by which thousands of people have been induced to invest in property still under water and for the drainage of which only the main canals are being provided, were brought to light, and it was shown that Congress had been led into publishing and circulating a report on the Everglades which was repudiated by the Department, and in which the latter was not permitted to make corrections of statement; but the Department itself was found to be entirely within its rights in failing to publish a report on the information it had. The investigation served to emphasize anew the extent of the victims of fraud and misrepresentation, and to point to the need of some form of protection of innocent persons in no condition to judge of the merits of elusive and fantastic schemes.

Country Life.—Organized effort for the study of country life and its betterment continues to gain in scope and extent. The National Country Life Conference, at Spokane, in 1911, appointed a temporary committee of rural-life leaders to meet and organize a national association of country-life commissioners. It is a part of the plan to have state commissions giving study and attention to the problems of each state and emphasizing the work. This marks another forward step in the movement.

An Illinois State Conference on Country Life, held at De Kalb, Aug. 1-2, brought together representatives of every type of rural organization and discussed all phases of country life. It was the second annual meeting of the Illinois Federation for Country Life Progress, a state-wide organization designed to unite all rural progress agencies in Illinois. In Massachusetts the third annual rural conference was held at the agricultural college during the summer, and was the most widely attended of any of these conferences. The speakers were representative of the leading institutions in the country which

are working for community betterment. The initial meeting of the Pennsylvania Rural Life Conference was held in Philadelphia, March 14-16, with speakers of national reputation and representatives of various agencies interested in different phases of rural life.

A lectureship on country-life problems has been added to the department of agricultural economics in the University of Wisconsin, with a view to discovering the needs of rural communities and starting movements in various localities to remedy unfavorable conditions. A training conference for rural leaders was held at the Cornell College of Agriculture June 25-July 5. It was especially designed for secretaries of rural Young Men's and Young Women's Christian Associations, rural ministers, school principals and teachers, editors, institute lecturers, and other active rural workers.

The General Education Board has made a grant of \$250,000 toward the endowment of a school of country life in connection with the George Peabody School for Teachers, at Nashville, Tenn. The object will be to train men and women for the right kind of country schools. A rural survey covering three counties in Missouri has been made by the department of church and country life of the Board of Home Missions of the Presbyterian Church, the results of which have been published in pamphlet form. The Spokane Chamber of Commerce, which has taken an active interest in country-life improvement, is advocating the plan of erecting country-life halls as community centers in the open country. A suggestive feature is the employment of a salaried secretary, whose duties will include the collection of data as to crop production of the district, and render available the information supplied by the publications of the Department of Agriculture, state experiment stations, and other agencies. A "social center" has been established by a landlord in western Texas on a 2,000-acre plantation. an auditorium being erected for use as a school, church, neighborhood clubhouse, and assembly hall. Meetings composed of ten-

ants, landlords, and their families are held weekly, when questions bearing on the interests of the community are discussed. The results are reported highly satisfactory.

Meetings.—An important gathering was the meeting at Columbus, O., in November, 1911, of the Association of American Agricultural Colleges and Experiment Stations, the Association of Farmers' Institute Workers, the American Societies of Agronomy and of Animal Nutrition, the Society for the Promotion of Agricultural Science, the American Farm Management Association, the new American Association for the Advancement of Agricultural Teaching, the Association of Official Seed Analysts, and the Association of Feed Control Officials. The National Grange and the Ohio State Grange were also in session in the city during the week.

These meetings brought together an unusual aggregation of workers in agricultural education and research, and well illustrated the present organization of agricultural science and education. In addition to the programmes of the individual societies, joint sessions were held at which such subjects as the improvement in methods of agricultural investigation, and the scope and purpose of farm management, were discussed. The Association of American Agricultural Colleges and Experiment Stations met in Atlanta, Ga., in November, 1912, and several of the above agricultural societies held their meetings in connection with that convention.

The extent to which agricultural questions are now commanding the attention of men in the various branches of science was well exemplified at the meeting of the American Association for the Advancement of Science, at Washington, in the closing days of 1911. A large proportion of the sections and the affiliated societies ordinarily devoted for the most part to pure science, gave prominence to discussions of soil fertility, crop production, plant improvement, economic questions, and methods of investigation bearing on typical agricultural questions.

The annual meeting of the South-

ern Commercial Congress, held at Nashville, Tenn., in the spring of 1912, was devoted to the presentation of facts showing the educational and agricultural recovery of the South during the past half century, and to a discussion of measures for the further advancement. Special interest was manifested in two conferences at which the wide scope of extension teaching in agriculture in the South was illustrated, and the sympathy and support which it is now receiving from educational leaders were emphasized.

The National Corn Exposition of 1912, which was to have been held at St. Paul, Minn., was passed over, on account of failure in the arrangements, and is to be held at Columbia, S. C., in January, 1913. A National Drainage Congress was held at New Orleans in April, the first meeting since the organization of the new body. It advocated a plan for the drainage of the swamp lands of the country, largely held in private ownership, the work to be done under the direction of the general government on a partial reimbursement plan. With the object of giving force and effect to the aims of the conference, the office of director was created, with M. O. Leighton, hydrographer of the U. S. Geological Survey, in charge. (See also X, *Reclamation*.) The Southern Commercial Congress, at Nashville, advocated a commission to standardize drainage laws, and urged that the Government make a complete survey of all swamp and overflowed lands and prepare plans for their drainage. The International Dry Farming Congress met at Lethbridge, Alberta, Canada, Oct. 21-25, 1912.

Agricultural Credit.—A well-defined movement is gaining force in this country to provide the farmers with better facilities for raising money to carry on their business. It is becoming apparent that agriculture is crippled for lack of credit and banking facilities. This need has been met abroad by agricultural credit associations which enable farmers to secure money at low rates. A conference on rural credit was held at Nashville, Tenn., in connection with the Southern Commercial Con-

gress, at which David Lubin, originator of the International Institute of Agriculture at Rome, made a strong argument to show the need of correcting the financial weakness of the rural life in this country, as compared with the industrial and commercial life, by building up rural credit on European experience. President Taft has strongly advocated measures in this direction. The Kansas Agricultural College has pointed out the great need of agricultural credit associations to tide farmers over periods of drought and years of shortage; and some system by which farmers can secure money at a low rate of interest is held to have a very direct relation to agricultural progress and to the cost of food.

Potash Supply.—Interest in the finding of an American supply of potash has continued unabated. A potash deposit of apparent importance has been discovered at Borax or Searles Lake, in San Bernardino Co., Cal. The lake is the last remaining pocket of a once much larger lake which has almost dried up, and its central depression contains a large body of crystalline salts. Analysis of samples of the brine shows an average of 6.78 per cent. of potassium oxide in solution.

The potash possibilities of the giant kelp fields on the Pacific coast are being investigated by the U. S. Bureau of Soils, and a commercial plant for the production of potash from this source has been opened near San Diego, Cal. A method of making water-soluble potash from feldspar rock has been patented in this country, and a considerable quantity manufactured on an experimental basis. The material contains about $4\frac{1}{2}$ per cent. of water-soluble potash, and it is claimed can be sold for much less than Canada wood ashes. It is being subjected to field experiments with various crops at a number of the experiment stations.

The Hawaii Experiment Station has found that the black sand deposits, which occur in numerous quantities in that country and are made up of cinders from old volcanic action, contain from 2 to 7 per cent. of potash, averaging about 5 per

cent. The potash is, however, not in immediately available form. (See also XXVI, *Agricultural Chemistry*.)

Nitre in Soils.—The discovery of excessive formation of nitrates in certain localities in Colorado, by Dr. W. P. Hadden and Prof. W. G. Sackett, is believed to explain difficulties experienced by orchardists and sugar-beet growers. High temperatures, abundant moisture under irrigation, and bare culture of the ground, are found to favor a high activity of the organisms which fix the nitrogen of the air and those which nitrify it. The result is an abnormally high nitrogen content of the soil, the formation of compounds which completely change the physical character of the soil, making it putty-like and hygroscopic, and producing an unhealthy condition for plant growth. As high as 19 tons in the surface foot of an acre of soil has been found. The beet crop and its sugar have been seriously affected in some parts, and apple orchards have died rapidly with the spread of the trouble. The finding of the cause is a significant discovery and has developed considerable discussion. (See also XXVI, *Agricultural Chemistry*.)

Forage Day.—A novel proclamation, and probably the first one dealing exclusively with agriculture, was made by Governor Mann, of Virginia, in setting aside Aug. 14 as Forage Day in that state, and urging the farmers to meet in their county seats to discuss forage crops with a view to increasing the amount and variety of hay, grass, and other forage crops raised in the state. County agents and demonstrators of the Department of Agriculture attended many of the meetings.

Necrology.—Hon. Norman J. Coleman, first Secretary of Agriculture and long a successful agricultural editor, died Nov. 2, 1911. Dr. M. A. Scovell, director of the college of agriculture and the experiment station in Kentucky, died Aug. 15, 1912, at the age of 57 years. He had been director of the Kentucky Station since its establishment in 1885, and in addition to his work at the station attained prominence as chairman of the committee in charge of the tests of dairy cows at the World's

Columbian Exposition in 1893. Prof. John Craig, head of the department of horticulture at Cornell University and a pomologist of national reputation, died Aug. 12, at the age of 47 years. Dr. H. A. Weber, one of the pioneer chemists in the field of agriculture and food control, and since 1884 professor of agricultural chemistry at Ohio State University, died June 14, at the age of 67 years. Dr. George M. Whitaker, secretary of the National Dairy Union, died at Fort Atkinson, Wis., Aug. 29.

New Books.—Among the important books of the year are: *Fertilizers and Crops, or the Science and Practice of Plant Feeding*, by L. L. Van Slyke (New York, 1912); *The Potato*, by Eugene Grubb and W. S. Guilford (New York, 1912); *Abridged Agricultural Records*, a compilation of the findings of the Department of Agriculture and the experiment stations, in 7 large quarto volumes (Washington, 1912); *Farmers of Forty Centuries*, a description and discussion of the agricultural practices and customs of China, Korea, and Japan, by F. H. King (Madison, Wis., 1911); *Engineering for Land Drainage*, by C. G. Elliott (New York, 1912); *Principles of Rural Economics*, by T. N. Carver (Boston and London, 1911); and *Cooperation Among Farmers*, by J. L. Coulter (New York, 1911).

The U. S. Department of Commerce and Labor has compiled and published a series of pamphlets on "Agricultural Opportunities" in various sections of the country. These give information concerning the resources, products, physical characteristics, and general agricultural conditions in 50 states and territories, grouped by natural divisions of the country.

DAIRYING

E. W. MORSE

Cost of Production.—In 1912, as in the previous year, the cost of producing milk averaged so high as to have a discouraging effect on the dairy industry. The results of an elaborate study on the cost of producing Minnesota dairy products

through a five-year period, reported by the Minnesota Experiment Station, showed that under average farm conditions in that state the cost is so high that the income received from milk or butter is not sufficient to cover the cost of production on most farms, although there were some farms where the conditions were unusually favorable and a fair profit remained for the producer. A five-year test at the Connecticut Experiment Station showed that at the present cost of feed and labor milk cannot be produced, even from a good herd, for four cents per quart, which is less than most producers receive; and the New York Experiment Station reported the cost at about four cents per quart to make milk at the present time. Probably the conditions which exist in these states are fairly representative of the dairy districts throughout the country.

Cost of Distribution.—The committee on markets of the New York State Food Investigating Committee reported that the high cost of milk to the consumer was due largely to faulty methods of distribution, as shown in the cash margin between wholesale cost price and retail selling price, which in the case of dairy products for New York City was as follows: fresh milk 71.5 per cent.; creamery butter 16.9 per cent.; whole milk cheese 28.13 per cent.; condensed milk 22.7 per cent. This compels the consumer to pay a high price and yet returns so low a figure to the dairyman as to discourage further increase in production. As estimated by a firm in Boston, the cost of delivering a quart of milk to the consumer is 4.4 cents, to which must be added 0.37 cent for shrinkage. The average price paid to the producer for one year was 3.9 cents per quart, making a net cost per quart when delivered to the consumer of 8.67 cents.

Dairy Shows.—Exhibition contests of milk, cream, butter, and cheese have rendered great educational service by showing the value of producing milk under sanitary conditions, and have proved that milk and cream properly handled can be shipped thousands of miles and remain sweet for weeks. They have helped to point

out to dairymen the common defects in milk and how to overcome them. The Kansas Experiment Station estimates that the annual loss in that state alone, due to poor cream, amounts to over \$1,000,000.

Milk Hygiene.—Several epidemics of septic sore throat, which occurred in Baltimore, Chicago, and other places, were traced to the presence of a *Streptococcus* in the milk supply. This adds another disease to which the public is liable, unless the production and sale of milk and its products are subjected to more stringent regulations. These outbreaks have stimulated the health authorities to renewed activity in regard to the regulation of conditions under which milk is produced and marketed, some even going so far as to advocate that if raw milk is to be used at all employees in dairies should be examined periodically for contagious diseases.

The adoption by the Board of Health of New York City, on Jan. 1, 1912, of regulations relative to the grading and proper labeling of milk is an important step, and if these can be enforced must cause radical changes in the methods of controlling the milk supply. It is proposed to inspect 44,000 farms in seven different states, and 12,000 stores in which milk is sold in New York City; also the conditions of transportation, wagons, pasteurizing and bottling plants, and creameries which handle the milk.

Creamery Products.—Although the creamery industry has been expanded in Canada, the supply of dairy products has not kept pace with the demand. There has been a decline in exports of cheese and cream from Canada to the United States, and during the season 1911-12 Canada was obliged to import over 2,000,000 lb. of butter from New Zealand.

A constant source of friction between the creameries and their patrons is the daily variation in the richness of cream, but extensive experiments carried on at the Indiana and Missouri experiment stations have proved conclusively that though there is a wide variation from day to day in these tests, it does not follow that the creamery is dealing dishonestly

with its patrons, for there are many factors which affect the percentage of cream as it leaves the separator, and unless there is uniformity in the care of the milk on the farm and its separation, and in sampling and testing the cream at the creameries, there must necessarily be more or less variation in each lot of cream produced on the same farm.

Coöperative Associations.—Much improvement has been made in the character of the animals kept for dairy purposes, both in Europe and the United States, in all localities where coöperative associations for cow testing and cattle breeding have been organized. The main centers of activity for this line of work of which reports are available have been in Maine, Minnesota, Michigan, and North Dakota. By means of this co-operation the poorer animals are weeded from the herd and their place is filled by better stock.

Dairy Records.—Phenomenal dairy records have been made, the most noticeable one being that of Banostine Belle De Kol, a five-year-old Holstein cow, which produced in one year 27,404.4 lb. of milk, or over 9 gallons per day. This milk contained on an average 3.86 per cent. of fat, which would be equivalent to 1,322.925 lb. of butter, or an average of over 3½ lb. of butter a day throughout the year.

Prof. Eckles, of the Missouri Experiment Station, has shown that tests of dairy cows made for short intervals at the beginning of the lactation period cannot be depended upon to indicate the normal percentage of fat produced by the cows tested, as a large percentage of the milk fat may be drawn from the body of the cow. Consequently, seven-day tests cannot be relied upon to indicate the value of a cow for milk-fat production.

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MARQUART, B.—*Lehrbuch des Milchvieh-Kontrollwesens.* (Berlin, 1911.)—This treats of the methods of organizing and conducting cow-testing associations, and their value to the dairy industry.

MONVOISIN, A.—*Le Lait, son Analyse, son Utilization.* (Paris, 1911.)—This treats of the chemistry of normal and abnormal milk.

Report of the Commission on Milk Standards Appointed by the New York Milk Committee. (Pub. Health and Mar. Hosp. Serv. U. S., Pub. Health Rpts., 27 (1912), No. 19, pp. 673-691; reprinted as Reprint No. 78.)—This gives a classification of milk and cream, definitions of bacteriological and chemical standards, and rules for the production, handling, and distribution of milk.

WILCOX, E. V.—*Production and Inspection of Milk.* (Hawaii Sta. Spec. Bul. 1912, July 31.)—This work includes a statement of approved methods of feeding and caring for cows, symptoms and treatment of their diseases, handling, transportation, sale, refrigeration, and pasteurization of milk.

WITT, G. A.—*Die Heiztechnischen Einrichtungen der Käserei.* (Bern, 1911.)—A systematic treatise on methods of heating the curd and supplying heat to all parts of the cheese factory.

LIVE STOCK

E. W. MORSE

Shortage in Cattle.—The United States is passing through a period of great changes in the live-stock industries, and particularly that of beef production. Cattle sold for higher prices in Chicago in 1912 than at any previous time. The closing of the open range and the abnormally high prices of feed for several years started a strong movement to market, which continued until the spring of 1912. At the end of the run there were enormous numbers of immature cattle thrown upon the market, and though there was a slight increase in the number of head received at the principal markets the average weight was much less than normal. The inevitable result has been a decreased amount of available meat, which cannot be restored to normal proportions for several years. Early in the summer the shortage became apparent, and the rise in prices of cattle on the hoof was accentuated by the promise of a good corn crop,

which caused a heavy demand for stockers and feeders.

The exportation of cattle from the United States has steadily decreased since 1904, until they have ceased to be of any importance as an article of export. Even the export of dressed beef from the United States to Great Britain temporarily ceased during the latter part of the summer. In the meantime, the importation of cattle has grown from 16,056 head in 1904 to over 300,000 in 1912. The cattle imported are drawn almost exclusively from Mexico, except in the case of those imported for breeding purposes, which come chiefly from England and Canada. This change in trade currents is caused largely by a reduction in the number of cattle on farms in the United States, there being a little less than 60,000,000 cattle on farms, as against over 70,000,000 in 1907. The export price of cattle has advanced from an average of \$71 in 1905 to about \$85 in 1912. There was an exceedingly heavy loss of animals from exposure and disease for the year. The total loss estimated for the year ended April 1, 1912, was as follows: cattle, 2,497,581 head; sheep, 3,834,702; swine, 5,834,456.

Cost of Distribution.—The Committee on Markets in New York State investigated the cost of distribution of meat and meat products, and found that the cash margin between wholesale cost price and retail selling price was as follows: beef hind-quarters 70 per cent.; beef fore-quarters 34.5 per cent.; pork and hams 45.45 per cent.; lamb 31.1 per cent.; bacon 33.33 per cent.; live fowls 25 per cent.; frozen roasters 24.15 per cent.; western eggs 19.47 per cent.; nearby eggs 30.42 per cent. This high cost of distribution has been the cause of a movement to establish a municipal market on a plan similar to that in Munich and other European cities.

Sheep.—At the beginning of the year sheep values were low because of the heavy liquidation in 1911, and the market had not recovered. The trade in wool throughout the year was brisk and healthy. In spite of a record clip in Australia the supply of raw wool was short at the end of the year. The oversea shipments of

wool from Australia and New Zealand amounted to a total value of \$144,008,854. The quality of the Australian wool has gradually become less fine and soft than formerly, as the coarser breeds were found to be more profitable to keep. There has been a decline in the shipments in wool from Argentina, as sheep are being replaced by cattle in order to supply Great Britain with beef which formerly came from the United States. There has been great activity in the sheep industry in Canada, which is being further encouraged by governmental measures.

Poultry.—The poultry industry has greatly increased over that of previous years in nearly every state. There have been many egg-laying contests both at home and abroad. That undertaken by the Missouri State Poultry Board has shown that both utility qualities and standard-bred points may be combined in the same fowl, as the best laying hen during the first eight months was a pure-bred fowl from a male and female which were both prize winners at poultry shows. Contests have shown that ducks are better layers than was generally supposed. On April 1, a 10-year egg-laying contest closed in New South Wales. During that time there was an improvement in the type of bird, and the average number of eggs was raised from 131 to 184 per hen per year. M. Les-carde, the French engineer, has discussed a new method for preserving eggs by packing them in a specially constructed metal box and treating them with carbonic-acid gas and nitrogen. In July an International Association of Poultry Instructors and Investigators was organized in London. Its object is the interchange of knowledge and experience among those engaged throughout the world in poultry teaching, demonstration, and investigation, and to promote the extension of knowledge by encouraging scientific research, collecting statistics, and improving methods of marketing.

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RICHARDSON, C.—*The New Book of the Horse*. (London, New York and Toronto.)—A general treatise on breeds of horses and methods of horse breeding in England.

ROBINSON, J. H.—*Principles and Practice of Poultry Culture*. (Boston, New York and London.)—A practical book on poultry raising.

DISEASES OF LIVE STOCK

W. A. HOOKER

A New Horse Disease.—The year was made notable by a serious outbreak of a disease among horses, the cause of which remains to be determined. During the third week in August this disease became epizootic among horses in central and western Kansas, and spread rapidly over the state and into neighboring states. Its spread in Kansas was so rapid and the mortality was so high (estimated by a competent judge at 95 per cent.) that horse owners were thrown into a panic. Following a trip through the infected district in Kansas about the middle of September, at which time 75 of the 105 counties were infected, it was estimated by Dr. W. S. Schoen-leber, head of the veterinary department, and Mr. E. H. Webster, director of the Experiment Station, that in the western half of Kansas alone at least 20,000 horses had died

of this disease. In addition to this direct loss of some \$2,000,000 in horses, the indirect loss, particularly in farm work undone on account of scarcity of horses, was estimated at twice that amount. The disease appeared to be spread by means of water and forage. At the time of writing there appears to be considerable doubt among those who have conducted investigations as to the actual cause of the disease. Many consider the disease to be a toxemia, resulting from the horses feeding on the moldy fodder brought about by the unusually wet weather. A vaccine which is said to have given favorable results was prepared and distributed by the Kansas Agricultural College.

Contagious Abortion of Cattle.—

From the viewpoint of economic importance, contagious abortion of cattle is ranked second only to tuberculosis, and in certain sections of the country it even supersedes the latter in the monetary loss it occasions. The disease may be brought into a herd by an unsuspected animal and may spread rapidly to other individuals without attracting attention, inasmuch as there are no readily noted symptoms present in the diseased animals. The studies of Drs. Schroeder and Cotton and Theobald Smith and M. Fabyan have shown that the causative organism of this disease occurs in the milk of affected animals. Through the application of the complement fixation test, it has been shown that the causative organism in the United States is the same as that in Europe.

Hog Cholera.—This disease was widespread in its occurrence. Several states commenced the manufacture of hog-cholera serum, making no less than 25 that are now supplying the serum.

Scabies in Cattle.—In August an order was issued releasing from quarantine on account of scabies in cattle 51,644 sq. miles of territory in South Dakota, Nebraska, Kansas, and Texas. About ten years ago when the work was first undertaken, scabies in cattle was prevalent in the territory west of the Mississippi River, and that entire area was quarantined. Portions of the terri-

tory have been released from time to time as they were freed from the disease, until now there remains in quarantine only a comparatively small area. The infection in this remaining territory is very light, and the Department of Agriculture believes that it will be only a short time before this disease is totally eliminated from the country.

Malta Fever.—This disease, found in 1911 to occur among goats in southwestern Texas and in New Mexico, where it has apparently been enzootic for the last 25 years, was reported during the year from Arizona. Two French investigators, Nègre and Raynaud, described a coccus which culturally and morphologically resembles *Micrococcus melitensis*, the cause of Malta fever, but is distinguished therefrom through its not agglutinating with a specific Malta-fever serum.

Dourine.—The perfection of the complement fixation test for the recognition of this disease made it possible for the Bureau of Animal Industry to diagnose in the laboratory at Washington, D. C., suspicious cases occurring in eastern Montana by means of blood sera from the suspected animals. Four of five animals tested in this way in July were found to be suffering from the affection. Thus it appears that another center of dourine has made its appearance in the United States, but at the time of writing it is impossible to state whether the disease was imported or originated from one of the previous outbreaks in this country. Its appearance in Brazil was reported for the first time.

Complement Fixation Test.—This test has been found to be a reliable means for diagnosing contagious abortion, glanders, dourine, Malta fever, and hemorrhagic septicemia, and it seems fair to believe that it will soon be available for diagnosing other diseases.

New Curative Drugs.—The drug dioxidyamidoarsenobenzol (606), first prepared by Ehrlich and now sold under the commercial name of salvarsan, was successfully used in treating contagious pneumonia and lymphangitis in equines. A new drug, known as neo-salvarsan (914),

has been experimented with and found to be more toxic to trypanosomes than is salvarsan.

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DISEASES OF PLANTS

WALTER H. EVANS

The American Phytopathological Association, the Botanical Society of America, and the American Association for the Advancement of Science met in Washington, D. C., Dec. 27-31, 1911, and many papers on plant pathology were presented.

The immediate effect of the passage by Congress of a national Inspection and Quarantine Act (see *Agricultural Legislation, infra*) was the establishment of a quarantine against the importation into the United States of potatoes from countries known to be infested with the black wart disease (*Chrysophlyctis endo-*

biotica), and the exclusion of certain species of pine from countries where the white-pine blister blight (*Peridermium pini*) is known to exist. The American Nurseryman's Association, through a committee, has begun cooperative experiments in ten states to determine the cause and effect of galls on the roots of apple trees.

Chlorosis in Plants.—This serious trouble is being studied by a number of investigators. Gile found that two or more per cent. of carbonate of lime in the soil contributed to the occurrence of chlorosis in pineapples. Mazé found that chlorosis could be induced in maize by a number of causes, among them an excess of lime, the absence of sulphur and iron, etc. Similar evidence from Italy has been recently presented. The chlorosis of grapevines is reported upon by a number of investigators in France. Lack of iron and too much lime are given as the chief causes.

Rusts and Other Diseases of Grains.—Arthur, Kern, Hecke, Dietel, Treboux, and others are continuing their investigations of the cereal, grass, and allied rusts, and have reported upon additional host plants for the alternate generations of a number of heteroecious species. Eriksson has presented additional data relating to his mycoplasma theory, and Pritchard offers more data on the wintering of rusts in the grain. Olive has added to his contributions relating to heteroecism in rusts, particularly as to the primary host plants of some hypothetical autoecious ancestors of rusts. Further notes have been published tending to confirm Bolley's hypothesis of disease infection of grain through soils and seed. Beckwith reports finding spores of about a dozen species of fungi in samples of wheat soils, and some are known to be parasitic on wheat.

Chestnut Bark Disease.—This destructive disease, attributed to attacks of the fungus *Diaporthe parasitica*, seems to be spreading and is now known to be present in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, District of Columbia, Virginia, and West Virginia. Congress appropriated \$80,-

000 for studying the disease and means for its control, and Pennsylvania is continuing its efforts under an appropriation of \$275,000 made in 1911. A conference was held in Harrisburg, Pa., Feb. 20-21, 1912, to consider ways and means for preventing the spread of this disease. Pathologists, forest officers, and others, representing 18 states, were in attendance at the meeting. Some controversy has arisen regarding the identity of the fungus causing the disease, and some pathologists claim it is indistinguishable by morphological characters from a species present in Europe as a harmless saprophyte on chestnut trees. This disease is not to be confused with a quite destructive disease of chestnut trees in Europe which is known as black canker or ink disease, from one of its most characteristic symptoms. (See also *Forestry, infra.*)

Potato Diseases.—Investigations on the potato-rot fungus (*Phytophthora infestans*) begun by Jones at the Vermont Agricultural Experiment Station have been continued by him and former assistants, and additional facts relating to the life history of the fungus have been worked out. The results of 20 years' experiments in spraying for the control of potato diseases in Vermont have been summarized, showing that by the use of Bordeaux mixture gains were made ranging from 18 per cent. in 1910, when there was no disease, to 215 per cent. in 1901, when diseases were very prevalent. For the control of the blackleg, a bacterial disease of potatoes, Morse recommends the treatment of the seed tubers with formaldehyde, the organism being carried in infected tubers. The wart disease of potatoes, due to *Chrysophlyctis endobiotica*, is giving much concern to potato growers in Europe. The hot dry weather of 1911 failed to check the development of the fungus. Güssow reports finding the fungus present on potatoes imported from England into Canada during the spring of 1912. In Germany the leaf-roll disease of potatoes continues to perplex pathologists, and a special committee has been appointed to make a study of its cause and means for its control. Miss Elizabeth Dale

has found that "blindness" in potatoes, a common trouble in England, is due to *Verticillium albo-atrum* destroying the eyes of the tubers, thus preventing their germination.

The Panama Disease of Bananas.—This disease has been reported from a number of additional stations, and further studies of the banana seem to indicate that there are a number of destructive diseases of this plant, some of which are due to fungi while others are caused by attacks of bacteria.

White Pine Blister Blight.—Attempts are being made to prevent the establishment of this disease in this country, but Spaulding has shown by a study of 10,000 three-year-old white pine seedlings that a single inspection will not reveal all the infected trees.

New or Little Known Plant Diseases.—Bessey has contributed the results of an extended study of the root knot of plants, due to nematode attack, and reports nearly 500 species of plants subject to this organism, *Heterodera radicola*. A serious disease of apple trees in Oregon, due to *Glæosporium malicorticis*, is described by Jackson. Güssow reports a new disease of peach trees in the Niagara regions of Canada and New York. A bacterial disease of cherries, characterized by a copious gum flow, is attributed to *Pseudomonas cerasus*. A new disease of sweet potatoes in Delaware is reported as being due to *Trichoderma koeningi*. Taubenhaus has found a new disease of sweet peas to be due to *Glomerella rufomaculans*, the same fungus that causes the bitter rot of apples. A new disease of cauliflower, due to *Bacterium maculicolum*, has been described. From Australia comes the report that maize smut (*Ustilago maidis*) and the late blight of potatoes (*Phytophthora infestans*) have made their appearance and are proving very destructive.

Bibliography.—Three new journals devoted in part to plant disease study have made their appearance since the previous issue of the YEAR BOOK. They are: *Journal of Economic Botany*, Pomona, Cal.; *Mycologisches Zentralblatt*, Jena; and *Zeitschrift für Gärungsphysiologie*, Berlin, Ger-

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many. Some of the more recent important contributions to plant disease literature are:

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SMITH, E. F.—*Bacteria in Relation to Plant Diseases*. (Washington, Carnegie Institution, 1912.)

—BROWN, Nellie A., and McCULLOCH, Lucia.—*The Structure and Development of Crown Gall, a Plant Cancer*. (U. S. Dept. of Agric., Bur. Plant Industry Bul. 255.)

SMITH, R. E., and Elizabeth H.—*California Plant Diseases*. (California Agr. Expt. Station Bul. 218.)

ECONOMIC ENTOMOLOGY

W. A. HOOKER

The most notable event of the year in the field of economic entomology was the passage of a national Plant Quarantine Act, aimed at the prevention of the further introduction of insect pests and plant diseases from abroad. The most notable insect outbreak of the year was that of the fall army worm (*Laphygma frugiperda*), which appeared in the South and was the source of great damage to many field crops.

Necrology.—Dr. John Bernhardt Smith, for the past 23 years entomologist of the New Jersey Experiment Station and professor of entomology at Rutgers College, died on March 13 at the age of 53 years. Dr. Smith was the author of numerous bulletins, reports, and papers on systematic and economic entomology, also of several books. E. L. Jenne, of the national Bureau of Entomology, known for his biological and economic studies of the codling moth and plum curculio, died May 10 at the age of 27 years. C. E. Hood of the Porto Rico Sugar Producers' Experiment Station, formerly with the national Bureau of Entomology, met with an accident which resulted in his death at Urbana, Ill., in June. G. H. Verrall, the eminent English dipterist and author of several large

volumes on British flies, died Sept. 16, 1911, at the age of 64 years.

Events.—An association of apiary inspectors of the United States and Canada was organized, with B. N. Gates chairman and E. F. Phillips secretary. The new entomological building erected at the New Jersey Experiment Station was completed and occupied.

The Fall Army Worm.—During the summer the grass or fall army worm, *Laphygma frugiperda*, appeared in the South from Florida to Texas in large numbers, damaging grass, corn, alfalfa, cowpeas, cotton, sugar cane, rice and in fact almost any vegetation. An emergency appropriation of \$5,000 by Congress made it possible for the U. S. Department of Agriculture to render quick assistance.

Mediterranean Fruit Fly.—This destructive enemy of no less than 80 different subtropical fruits and vegetables, especially citrus fruits and particularly the orange, was first discovered in Hawaii on the island of Oahu about the middle of the year 1910. Since that time it has increased rapidly and spread into other islands. This fruit fly is the most serious drawback to the successful cultivation of fruit in countries where it is established, the cultivation of fruit being scarcely possible in the worst infested regions. In Bermuda the fruit-growing industry was practically destroyed many years ago by the introduction of the insect into that island. Since its introduction into the United States would in all probability be calamitous to the orchard interests of the more southern states and of California, in which regions it would find conditions very similar to those in countries where it now exists in most destructive numbers, it has become a source of great anxiety, especially to citrus fruit growers. In order to combat and aid in preventing its introduction into this country, an emergency appropriation of \$35,000 was made by Congress. The Plant Quarantine Act passed by Congress in August enabled the Secretary of Agriculture to establish and maintain a quarantine against this most destructive pest.

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Alfalfa Leaf Weevil.—This important pest has continued to spread in Utah, Idaho, and Wyoming. Several important parasites which have been found in Italy are being introduced with the hope that they may become established and assist in controlling it, and several methods of destroying the weevil in the field have been experimented with.

Cotton Insects.—A very large dispersion of the cotton boll weevil took place, this being brought about in no small measure by the defoliation of cotton by the cotton leaf worm, which again appeared in large numbers and was the source of great injury throughout nearly all portions of the cotton belt. The cotton red spider was the source of considerable injury at many points in the cotton belt.

The Leopard Moth.—This most pernicious shade-tree pest, accidentally introduced from Europe many years ago, continued uninterruptedly in its damage to elms and silver maples in the coast cities and towns of north-eastern United States.

Insecticides.—In the destruction of the house fly wide use was made of formalin in milk and water, as recommended by R. I. Smith. Tests made of zinc arsenite have shown that it has many advantages not possessed by lead arsenate in combating the codling moth. The addition of soap was found by J. R. Parker of the Montana Experiment Station to be of considerable value in preventing the settling of arsenicals.

Insects and Disease.—The agitation of the importance of destroying the house fly continued with increasing force. Newspapers have carried on campaigns by offering rewards and town, city, and state boards of health have extended their activity in this direction. At the International Congress of Hygiene and Demography, held at Washington, D. C., much time was given to the discussion of this disease carrier. At that time Dr. C. W. Stiles reported observations made in a southern cotton-mill town which convinced him that while amebic dysentery may be water-borne, the house fly was responsible in instance for the conveyance of neba which causes the disease.

It was shown by Darling that in the vicinity of the Canal Zone the house fly may transmit the trypanosome which causes the disease of equines known as murrina or derrengadera. (See also XXX, *Medicine*, and *Public Health and Hygiene*.)

Diseases of Insects.—Investigations of the Isle of Wight disease of the honey bee by Graham-Smith, Fantham, and Porter led to the conclusion that the protozoan parasite *Nosema apis*, which also occurs in this country, is the causative agent in most outbreaks in which the Isle of Wight symptoms are present. F. H. de Herelle reported studies of an outbreak of disease among locusts in Yucatan caused by a coccobacillus. Attempts to combat locusts in Argentina by means of this organism have met with considerable success.

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AGRICULTURAL LEGISLATION

H. L. KNIGHT

Federal Legislation.—Unusual interest in agricultural matters was manifested by Congress in 1912, and upon its adjournment in August a number of important measures had become law. Several others had been adopted by one of the two houses, and others were awaiting consideration following a favorable report from the committees in charge. The Agricul-

tural Appropriation Act, carrying the appropriation for the national Department of Agriculture and the experiment stations, and containing several items of new legislation, is noted elsewhere. (See *Agriculture, supra.*)

Inspection of Imported Nursery Stock and Seeds.—Under a law which became effective Oct. 1, 1912, known as the Plant Quarantine Act, the promiscuous importation of nursery stock, through which a number of serious plant diseases and insect pests have been introduced into this country, has been replaced by a system of inspection and quarantine. In general, all nursery stock must now be inspected in the country from which it is shipped, and its subsequent movements upon import and in interstate commerce recorded until it has been inspected. The notifications regarding these shipments must be furnished the federal Department of Agriculture, which transmits the information to the appropriate state authorities, in whose hands rest the actual inspections. Similar action may also be required as regards the importation of other plants, fruits, vegetables, seeds, etc., in case their unrestricted entry becomes prejudicial. Whenever deemed necessary in order to check the introduction of a new pest, importations may be excluded entirely from certain countries or of certain kinds of plants, and any state may be quarantined as regards the shipment of affected products in interstate commerce. Such a quarantine has already been put in force against the white-pine blister rust, potato wart, and Mediterranean fruit fly (see *Diseases of Plants*, and *Economic Entomology, supra.*). A federal Horticultural Board of the U. S. Department of Agriculture has been appointed to administer the act, aside from the actual making of inspections of imported stock and the cleaning up and disinfecting of quarantined areas, which duties are left entirely to state officials.

Another measure which becomes effective Feb. 24, 1913, prohibits the importation for seeding purposes of grain and grass seed when deemed adulterated or otherwise unfit for this use.

Standardizing Apples.—An act which

goes into effect July 1, 1913, establishes a standard apple barrel containing 7,056 cu. in., and defines standard grades for apples on the basis of variety, size, and quality. Barrels need not be labeled, but the use of the designation "standard" on apples entering into interstate commerce is punishable as misbranding unless the fruit and barrels conform to the requirements.

Miscellaneous.—An amendment was adopted to the Food and Drugs Act of 1906 extending the act to claims as to the curative or therapeutic action of drugs (see XXVI, *Chemistry of Food and Nutrition*). Provision was made for the collection of additional cotton statistics, and for an inquiry into the general condition of farm labor. In an attempt to demonstrate the possibilities as to growing spineless cacti for forage, Luther Burbank was granted the use of 7,680 acres of semiarid lands for five years, with the privilege of purchasing these lands if successful (see X, *Public Lands*).

Pending Legislation.—The so-called Lever bill, carrying an ultimate appropriation of about \$3,500,000 per annum to the states for the maintenance of agricultural extension work through their agricultural colleges, passed the House of Representatives shortly before adjournment. The Senate began consideration of the Page bill, which likewise provides for extension work, but in addition appropriates for instruction in agriculture, industrial training, and home economics in secondary schools, the training of teachers in these subjects, and the maintenance of branch experiment stations, with an ultimate expenditure of \$15,000,000 per annum.

A resolution providing for the appointment of a commission to investigate the operation of coöperative land mortgage banks and coöperative rural credit unions in other countries was passed by the Senate. Favorable committee reports were made on bills to prevent gambling in agricultural products (see XIII, *Economic Conditions and the Conduct of Business*), and to provide for grain inspection. A determined attempt to secure the removal of the revenue

tax on colored oleomargarine was vigorously contested by the dairy interests, all action being finally deferred until the December (1912) session.

State Legislation.—The legislatures of only about one-third of the states were in session during 1912, and comparatively little legislation was enacted.

Reforestation.—With a view to encouraging the reforestation of cut-over and otherwise unproductive lands and the conservation of existing woodlands, important changes in the system of taxing these lands were made in New York, and in Massachusetts a constitutional amendment permitting similar legislation was submitted to popular vote. In New York lands deemed suitable for forest growth by the state conservation commission may now, during maintenance for this purpose, be assessed at a reduced rate on the basis of the land valuation alone, and if forested and handled under the supervision of the commission may be exempted entirely for 35 years. The timber will, upon cutting, be taxed 5 per cent. of the stumpage value. Counties, towns, and villages were also authorized to acquire and operate forests. (See also *Forestry, infra.*)

Inspection Laws.—A pure-food law was enacted in Arizona, and New York adopted a provision, effective June 1, 1913, requiring the sale of

food products in standard containers, or their labeling to show the net weight or volume. Maryland and Virginia revised their former fertilizer inspection laws and provided for lime inspection. New York and Maryland enacted seed inspection laws.

Animal Industry.—A bill providing for stallion registration in New York failed of passage, but an appropriation of \$5,000 was granted for promoting horse breeding in the state. In Massachusetts the cattle bureau was superseded by a bureau of animal industry. Maryland and Kentucky began manufacturing and distributing hog cholera serum and similar preparations. Owners of dairy stock proving tuberculous upon test were allowed reimbursement in Virginia.

Irrigation and Drainage.—A complete irrigation code was enacted by the new states of Arizona and New Mexico. The organization of drainage districts was authorized in Maryland, and a loan fund of \$10,000 was provided for the reclamation of swamped lands. (See also *X, Reclamation.*)

Extension Work.—A system of county demonstration farms supported in part by state funds was initiated in Wisconsin. New York authorized its counties to make expenditures for the employment of agricultural advisers. (See also *Agriculture, supra.*)

HORTICULTURE

E. J. GLASSON

Crop Conditions.—The early winter of 1911-12 was unusually open, followed by a spell of the severest weather for several years. Its total effect on fruit crops was to curtail what would otherwise have been a banner production. The greater damage was done in the older orchards. The increasing number of young orchards coming into bearing kept the total yield fairly close to that of an average year. Apples even showed a gain, with an estimated yield of about 35,000,000 barrels as compared with about 30,000,000 in 1911. On the other hand, the California citrus crop was reduced

to about 12,000,000 boxes, as against 14,000,000 boxes in 1911. The peach crop and the eastern grape crop likewise suffered important reductions. Southern peach orchards largely escaped the damage done in other sections, Texas and Georgia together shipping over 15,000 cars. Shipments of fresh deciduous fruits from California totaled over 13,000 cars as compared with 12,500 cars in 1911. The largest crop of onions on record, over 6,000,000 bushels, was produced in 1912; and the Department of Agriculture estimated the potato crop at 398,000,000 bushels, an increase of more than 100,000,000

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bushels over 1911. A serious car shortage in 1912 resulted in heavy losses to many northern and western fruit growers.

Tree Statistics.—The following statistics, taken from a report of the Bureau of the Census, show an important increase in producing plantations of tropical fruits and of nuts, but a surprising decrease in those of temperate-climate orchard and small fruits:

CENSUS OF HORTICULTURE

(Figures expressed in thousands)

	1910	1900
TROPICAL FRUITS, trees of bearing age:		
Oranges.....	9,738	8,396
Lemons.....	957	1,519
Figs.....	822	377
Pineapples.....	36,191	14,580
All tropical fruits.....	49,435	26,868
ORCHARD FRUITS, trees of bearing age:		
Apples.....	151,323	201,795
Peaches and nectarines..	94,507	99,917
Pears.....	15,172	17,716
Plums and prunes.....	23,445	30,781
Cherries.....	11,822	11,943
Apricots.....	3,670	5,010
Other orchard fruits.....	1,179	2,215
Total orchard fruits....	301,117	369,377
GRAPES, vines.....	224,104	182,330
SMALL FRUITS, acres:		
Strawberries.....	143	151
Blackberries and dewberries.....	49	50
Raspberries and loganberries.....	49	61
Currants.....	8	13
Gooseberries.....	5	7
Cranberries.....	18	20
Other small fruits.....	1	7
Total small fruits.....	272	310
NUTS, trees:		
Persian or English walnuts.....	916	727
Almonds.....	1,188	1,649
Pecans.....	1,620	643
Total nuts.....	5,027	3,702

Of trees under bearing age in 1910 there were 65,792,000 apples, 42,266,000 peaches and nectarines, and 8,804,000 pears. Grape vines not of bearing age in 1910 amounted to 59,927,000. In 1909 there were 10,614 florist establishments reporting products valued at \$34,872,000, as compared with 8,797 establishments

with products valued at \$18,759,000 in 1899. The total value of nursery products reported from 5,582 establishments in 1909 was \$21,051,000, an increase of 591 establishments and \$10,927,000 in value in ten years.

Export Trade.—In the fiscal year 1912 the United States exported \$30,354,700 worth of fruits and \$6,544,118 worth of vegetables, as compared with fruit imports to the value of \$29,549,281 and vegetable imports amounting to \$18,544,873. Export fruits exceeded import fruits for the first time since 1904. There was a considerable increase in exports of canned and dried fruits during the year, whereas fresh apple shipments fell off somewhat. Canada, principally Nova Scotia, exported 1,534,000 barrels of apples, while the United States exported only 1,230,000 barrels. In 1912, \$7,168,627 worth of white potatoes were imported, as compared with only \$235,847 worth in 1911.

Legislation.—Two important measures affecting commercial horticulture were enacted by the federal Government during the year. One of these establishes a standard apple barrel, containing 7,056 cu. in., and also creates standard grades for apples, while the other measure provides for a system of inspection and quarantine against the importation of serious plant diseases and insect pests on nursery stock and other plants and plant products. (See *Agricultural Legislation, supra.*)

U. S. Department of Agriculture.—The Department of Agriculture has been actively engaged in searching out foreign kinds of fruits and nuts, to be tried out in sections where our common varieties do not thrive. The desert lime of Australia, a species related to the orange, will stand frost and drought, and has small edible fruits of fair quality for making preserves. The Chinese wild peach has been able to stand more cold than the hardiest variety of peach in Iowa, and has also stood the extreme heat of the Southwest in a remarkable way. It promises to be a valuable stock in California. With the possibility of creating superior blight-resistant pears, all of the best varieties found in China and Central Asia

are being assembled for the use of the pear breeder. Special efforts are being made to introduce foreign varieties of the Persian walnut. Those that give promise of meeting the demands for an extension of the area of cultivation are to be thoroughly tested. The Department has also been active in the identification of fruits from every section of the country; in a survey of the fruit districts of many states; and in fruit marketing, transportation and storage investigations, which now include practically all classes of fruits.

By a series of experiments extending over the past six years, the Department has found that California grapes packed with a filler of clean redwood sawdust keep better and longer in cold storage than when packed in ground cork, the material used for packing imported grapes. Redwood sawdust is more nearly neutral in odor and flavor than even ground cork, and does not impart taste or odor to the fruit.

Processing Japanese Persimmons.—Extensive experiments on processing green Japanese persimmons with

carbon dioxide, conducted by the Department of Agriculture and also by the Alabama State Experiment Station, led to the recommendation of this method for producing firm tannin-free fruit for local distribution, and also for treating fruit after shipment. Treated fruit does not stand up well during shipment. (See also XXVI, *Agricultural Chemistry*.)

Tree-Planting with Dynamite.—In large orchard operations during the past two seasons dynamite has been extensively used in planting fruit trees, especially on rough lands. Summing up the evidence of growers, the average cost compares favorably with planting entirely by hand, planting is done much more rapidly, increased growth is secured, and a much larger percentage of young trees successfully pass through the first season. In certain cases, old orchards growing in soils with a shallow hardpan are said to have been benefited by the use of dynamite. An experimental study of the value of dynamite in orchards was started by the Department of Agriculture late in 1912.

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FORESTRY

E. J. GLASSON

All of the leading activities in the forest world in 1912 point to the one aim, conservation. Of the factors affecting conservation, forest protec-

tion was receiving the most attention.

Fire Protection.—Coöperative fire protection under the Weeks law, as

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conducted over 40 watersheds in 11 different states, has been highly successful at a relatively low cost. In 1911 a dangerous year for forest fires, one million acres in New Hampshire received protection from serious loss at a cost of less than 1½ cents per acre. Through the systematic patrol of the forests in states co-operating with the Government, the people have been educated to the need and value of fire protection and encouraged to coöperate. The rural mail carriers in practically all the National Forests and in states having fire-protection systems have been instructed to report all fires. Observation towers scattered all over the state in Massachusetts at a cost of about \$20,000, are reported to have cut down the loss from \$530,428 during the first seven months of 1911 to \$50,000 during the same period in 1912. Wireless telegraph stations are to be built on summits in various sections of Vermont for transmitting messages to rangers when forest fires are discovered.

National Forests.—A complete overhauling and rectification of the forest boundaries has been going on ever since 1909, when the gross area was 194,000,000 acres. By successive proclamations, President Taft has eliminated nearly 11,000,000 acres and added about four million acres. The gross area now totals 187,400,000 acres, of which nearly 27,000,000 acres are in Alaska. Some 22,000,000 acres included in the National Forests are not owned by the Government.

The Geological Survey and the Forest Service, which branches have had charge of investigating eastern forest land to be bought for the Appalachian Forest Reserve, have laid out tracts totaling 6,000,000 acres. Thus far 3,000,000 acres have been offered for sale.

Forestry Investigations.—The Forest Products Laboratory at Madison, Wis., has under way many studies of value to the wood-using industries. The work reported on during the year includes strength values for structural timbers, a report on wood-paving experiments in Minneapolis, strength tests of cross arms, information relative to commercial creos-

otes with special reference to protection of wood from decay, determination of the specific heat of wood, and experiments with jack pine and hemlock for mechanical pulp. In these last experiments promising sheets of pulp have been obtained from both species and paper has been made from them on commercial machines. The Forest Service, co-operating with state authorities, is making an exhaustive study of the wood-using industries in all the states. During the year an experiment station was established on the Manti National Forest, near Ephraim, Utah. One of the first problems to be taken up will be to learn how the maximum grazing use of natural forest land can be obtained without injury to forest production and stream flow.

Forest Extension.—Through the newly enacted Jones law in New York State, a premium has been placed upon the planting of trees. The law exempts from assessment and taxation for 35 years parcels of one to 100 acres planted for forestry purposes, with not less than 800 trees to the acre. Existing woodlands underplanted with not less than 300 trees per acre are likewise exempted, and woodlands underplanted with less than this number of trees are to be assessed for 35 years at 50 per cent. of the assessable valuation, exclusive of the forest growth. Another New York law provides for exemption and reduction in assessments of lands maintained as farm woodlots. (See also *Agricultural Legislation, supra.*)

In addition to the usual national reforestation work, all states maintaining nurseries reported greatly increased operations during the year. New York has 11,000,000 young trees ready to meet a widespread demand. Pennsylvania distributed over two million in 1912, and in Vermont the demand for trees was unprecedented.

The Pennsylvania Railroad Company has been making forest plantings for many years. In 1912 370,000 trees were planted, and a nursery of over two million trees maintained. The Delaware and Hudson Railroad has also taken up the prob-

lem of reforestation. It has over three million seedlings, and expected to plant over 600,000 trees in 1912.

Education.—The New York State College of Forestry at Syracuse and the new forestry department at Cornell University have recently been opened. Both schools offer complete courses in forestry. The Colorado School of Forestry has established a new one-year ranger course, and the University of Missouri forest school started a permanent summer forest camp for practical instruction.

Chestnut Bark Disease.—The continued spread of the chestnut blight

in the eastern states greatly stimulated the lumbering of mature trees. Congress increased the fund for studying and controlling the disease from \$5,000 to \$80,000, of which \$10,000 is to be expended in the study of the relation of insects to this disease. Pennsylvania now has over 75 men in the field scouting for the blight in the western half of the state. Isolated groups of infected trees have been removed as fast as found. The Boy Scouts have been of great assistance in the work of detection. (See also *Diseases of Plants, supra.*)

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FISHERIES

ETHEL M. SMITH

In a general consideration of the fisheries of the United States, the first place may logically be given to the oyster fishery, which is of present leading importance in nearly every coastal state from Massachusetts to Texas, and has undeveloped resources of enormous value. The other fisheries, for convenience in discussion, may be treated in geographical classification.

Oyster Fishery.—A statistical canvass conducted by the United States Bureau of Fisheries and pertaining to

the years 1910, 1911 and 1912 has covered all of the oyster-producing states of the Atlantic and Gulf coasts except Maryland and Virginia, where agents are still in the field. The returns so far as available are given on the next page.

The most interesting item in these returns is the output of Louisiana, which alone of all the southern states shows an increase since 1908, and which has quadrupled its yield in ten years as the direct result of favorable legislation and an impetus

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PRODUCTION AND VALUE OF OYSTERS

STATE	Quantity, bushels	Value	Average price per bushel
NEW ENGLAND STATES (1910):			
Massachusetts.....	287,543	\$335,524	\$1.16
Rhode Island.....	2,268,278	1,368,701	.60
Connecticut.....	3,272,000	1,885,494	.58
Total.....	5,827,821	\$3,589,719	.....
(1911)			
New York.....	3,917,819	\$3,381,623	\$0.86
New Jersey.....	2,778,210	1,244,615	.45
Delaware.....	493,528	223,219	.45
SOUTH ATLANTIC STATES (1910):			
North Carolina.....	332,257	\$63,405	\$0.19
South Carolina.....	710,124	94,677	.13
Georgia.....	505,157	170,812	.33
Florida (east coast).....	153,460	35,290	.23
Total.....	1,700,998	\$364,184	.....
GULF STATES (1911):			
Florida (west coast).....	187,462	\$109,472	\$0.57
Alabama.....	441,917	72,742	.16
Mississippi.....	657,670	140,420	.21
Louisiana.....	4,504,402	1,022,723	.23
Texas.....	434,690	131,609	.32
Total.....	6,226,141	\$1,476,966	.....

to oyster culture following the establishment of experimental plants in that region by the federal Government. A further showing of the importance of oyster culture appears on

comparison of the output of cultivated and natural grounds in the different groups of states, and the relative value of the product from cultivated and natural grounds:

SECTION	CULTIVATED GROUNDS		NATURAL GROUNDS	
	Bushels	Value	Bushels	Value
New England.....	5,549,318	\$3,439,450	392,703	157,584
New York, New Jersey, Pennsylvania, Delaware.....	4,553,000	3,926,225	2,636,557	923,232
South Atlantic.....	456,194	171,298	1,091,344	157,596
Gulf ^a	2,080,005	634,147	4,299,596	878,109

^a Includes all of Florida, which has no cultivated grounds on the east coast.

To these figures may be added the testimony of Maryland and Virginia, for which state reports give 3,500,000 and 12,000,000 bush., respectively, as the output for 1911. Since 1892, when the oyster resources became the subject of state legislation favorable to oyster culture, Virginia's product has increased almost steadily, while Maryland's has declined, although the natural oyster grounds of the latter state are the most extensive and the richest in the country. In 1906, however, the Maryland legislature passed an act which brought that state abreast of the other prosperous oyster-producing regions in respect to administration, and which, with amendments passed in April, 1912,

perfecting the existing law, will doubtless in time regain for Maryland the leading place she once occupied.

New England Vessel Fisheries.—The products of these important fisheries, which center at Boston and Gloucester, reached in 1911 a total of 185,153,367 lb., with a value of \$5,024,497. This quantity represents 6,800 trips, with cod, cusk, haddock, hake, pollock, halibut and mackerel the chief products. Up to Sept. 1, 1912, the returns for these fisheries showed a product of 116,795,931 lb., worth \$2,976,407, against 117,389,778 lb., worth \$3,107,451, for the same eight months of 1911.

An event of especial significance to the New England vessel fisheries is

the development on the American coast within the last few years of a fishery conducted by means of the trawl-net, a method long extensively used in European waters, but accused by the line fishermen of New England of depleting the fisheries by indiscriminate capture and waste of undersized fish. Because of this sentiment, a bill was introduced in the last Congress designed to prevent the use of the trawl-net by prohibiting the landing of fish so caught. After a hearing of both sides of the question, however, by the House Committee on Merchant Marine and Fisheries, a joint resolution of House and Senate was adopted, providing for federal investigation and impartial inquiry to obtain the necessary facts upon which to base intelligent legislation.

Pacific Coast Fisheries.—The Pacific fisheries for cod, halibut, herring and whales are experiencing rapid development, and trade reports for 1911 indicate an increased output also of oysters, clams, crabs, and shrimps. About one-third of the oyster product is composed of the transplanted eastern species.

The Pacific salmon industry is the only west-coast fishery which is facing an immediate conservation problem. The output is continuously large, and Alaska, from which alone are official statistics available annually, in 1911 yielded 142,588,523 lb. of prepared products, worth \$15,128,156. Trade reports place the product for the entire coast, including British Columbia, at 324,895,576 lb., worth \$36,949,469. The enormous yield has inevitably created a necessity for regulative measures, which has not been met in the Puget Sound region, where opposition to the proposed federal control of boundary waters and the failure of the state of Washington to adopt any other adequate provisions, have left the salmon supply in danger.

There is a new factor in the situation, moreover, in the rapid development within the past few years of a purse-seine fishery for salmon off Cape Flattery. The seine boats, which are expected to reach 200 in number this season, capture the salmon before the run strikes in to the Sound and

rivers, thus curtailing the catch in the localities to which the fishery has hitherto been restricted. Whether the purse-seines and the sharp competition they will provoke will prove dangerous to the fishery is as yet problematic. At this early stage, however, the question has proved to have an international bearing, and points to the need of international control of boundary waters, for the reason that the seining grounds are near the boundary line and already American fishermen have been seized by the Canadian patrol. In response to complaints, a United States revenue cutter has been sent to patrol the same locality in American interests.

Great Lakes and Interior Waters.—Incomplete reports from states interested in the immense fresh-water fisheries of the Great Lakes indicate on the whole as large a product as in recent years, although the yield of whitefish is much less than it once was. In the Mississippi Valley, and in the Illinois River especially, a serious decline in the buffalo-fish and carp fisheries has been evident, attributable, it is thought, to the reclamation of lowlands which have been the spawning grounds. A plan for state reservation of certain areas has been suggested to meet this difficulty. The excessive floods of the summer of 1912, carrying more than the usual large quantities of fish out of the main streams and leaving them to die when the waters receded or dried up in the lowlands, will undoubtedly prove to have seriously affected the numbers of bass, crappie, sunfish, perch, and other important fish of the rivers in those localities.

Bureau of Fisheries.—The most conspicuous fisheries work on the part of the Government is the propagation and distribution of food fishes. The output of the 32 main stations and 92 auxiliaries, in 31 states, in the year ending June 30, 1912, was more than 3,426,000,000 fry and over 32,200,000 fingerlings, yearlings, and adult fish, besides 229,000,000 fish eggs consigned to state hatcheries and 335,000 shipped to foreign governments. All but a small percentage of the young fish planted were such important commercial species as the

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Pacific salmon, whitefish, lake trout, pike perch, shad, yellow perch, cod, mackerel, flatfish, and lobster. Two new auxiliary salmon stations on the Duckabush and Quilcene Rivers in the Puget Sound region were completed and put in operation in 1912, and the construction of newly authorized hatcheries in Kentucky, Wyoming, and South Carolina, and of a biological station in Florida was begun.

In the biological work of the Bureau, the pearl-mussel resources of the Cumberland, Illinois, and Arkansas Rivers and several Minnesota streams were investigated and the results were published in the form of circulars to mussel fishermen and button makers. From the laboratory and mussel hatchery at Fairport, Ia., and the auxiliary at Homer, Minn., over 83,000,000 young mussels have been liberated during the past year, and the cultural work was further advanced by the discovery of the host of the larval parasitic stage of two kinds of mussels most valuable to button makers but hitherto baffling to the biological experimenters.

The Alaska fisheries service extended its activities in 1912 by means of an increased personnel, and with the usual inspection work and statistical canvass of the fisheries, is making important observations looking to the development of the so-called minor fur resources of the territory. The value of the furs of this character in 1911 was \$370,579, which compares well with the \$432,231 received for the fur-seal skins taken in Alaska that year. These latter,

moreover, brought only \$35 per skin on the average, while the blue-fox skins from the Pribilof Islands, 371 in number, sold for about \$44 apiece. By a change of policy on the part of the Government, the Pribilof fur-seal catch in 1912 numbered only 3,764 skins, chiefly three-year-olds instead of including more two-year-olds as heretofore.

A herd of reindeer has been successfully introduced on the Pribilof Islands.

Legislation.—In addition to the joint resolution already mentioned, providing for investigation of the effects of trawling, Congress passed an act giving effect to the treaty between Great Britain, Russia, Japan and the United States, ratified in 1911, which prohibited pelagic sealing in the North Pacific (*AMERICAN YEAR BOOK*, 1911, pp. 67, 504). This law contains also a provision prohibiting all killing of seals on the Pribilof Islands for a term of five years.

An item of \$7,156 in the diplomatic and consular appropriation act for the current year authorized the participation of the United States in the Permanent International Council for the Exploration of the Sea, and a representative was present at the annual meeting in Copenhagen in September. This council contemplates the important work of continuous coöperative investigation of biological, physical, and statistical questions pertaining to commercial fisheries.

The United States Bureau of Fisheries received an appropriation of \$944,790 for its expenditures during the year ending June 30, 1913.

STATISTICS OF AGRICULTURE

WORLD'S PRODUCTION OF PRINCIPAL CROPS, 1899-1911

(*Yearbook of the Department of Agriculture*)

	1899	1904	1909	1910	1911
Barley (bu.) . . .	841,970,000	1,167,053,000	1,477,389,000	1,383,192,000	1,376,618,000
Corn (bu.) . . .	2,724,100,000	3,109,252,000	3,557,150,000	4,026,967,000	.....
Cotton (bales) . . .	21,005,175	21,005,175	18,095,200	19,992,780	.....
Flaxseed (bu.) . . .	107,743,000	107,743,000	100,943,000	.....	.....
Hops (lb.) . . .	250,833,060	.....	128,173,048	188,749,028	147,315,000
Oats (bu.) . . .	3,212,689,000	3,536,179,000	4,354,430,000	4,214,727,000	3,829,062,000
Potatoes (bu.) . . .	4,298,049,000	4,298,049,000	5,545,707,000	5,196,715,000	.....
Rice (lb.) . . .	74,074,369,193	115,735,800,000	136,780,647,000	134,519,597,000	.....
Rye (bu.) . . .	1,612,161,000	1,740,406,000	1,742,466,000	1,668,937,000	1,577,520,000
Sugar (long tons) . . .	7,973,122	10,318,828	14,263,800	14,524,450	16,418,500
Tobacco (lb.) . . .	.....	2,146,641,000	2,701,048,000	2,756,077,000	.....
Wheat (bu.) . . .	2,725,407,000	3,162,340,000	3,584,702,000	3,572,084,000	3,516,862,000

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES, 1899-1911

(Yearbook of the Department of Agriculture)

	1899	1904	1909		1910		1911	
	Produce- tion (000 omitted)	Produce- tion (000 omitted)	Acres	Produce- tion (000 omitted)	Acres	Produce- tion (000 omitted)	Acres	Produce- tion (000 omitted)
BARLEY (bu.):								
Algeria.....	20,000	37,106	3,284	50,008	3,418	48,708	3,320	47,588
Austria-Hungary..	116,672	119,451	6,014	157,385	5,799	127,767	5,785	152,994
Canada.....	23,797	43,872	1,864	55,398	1,834	45,148	1,404	40,641
France.....	47,782	38,827	1,814	46,144	1,849	43,477	1,901	47,460
Germany.....	139,241	135,409	4,068	160,552	3,880	133,330	3,916	145,132
Japan.....	44,000	80,000	3,136	87,235	3,176	82,003	.....	95,593
Russia.....	226,909	343,981	26,709	473,618	28,451	458,992	.....	411,234
Spain.....	.....	60,000	3,480	81,579	3,333	76,308	3,567	86,792
United Kingdom..	76,911	64,474	1,827	71,116	1,896	65,097	1,756	59,696
United States.....	73,382	139,749	7,698	173,321	7,743	173,832	7,627	160,240
CORN (bu.):								
Argentina.....	66,185	175,189	7,348	177,155	7,425	175,187	7,945	27,675
Austria-Hungary..	145,244	89,757	8,573	210,684	8,266	240,761	.....	.....
Bulgaria.....	20,462	12,758	1,501	20,472	1,511	28,360	.....	.....
Canada.....	22,356	20,242	352	19,258	328	18,713	316	18,767
Egypt.....	30,000	30,000	1,910	65,000	.....	70,294	.....	67,903
France.....	25,548	19,482	1,222	26,075	1,192	23,399	.....	.....
Italy.....	88,536	90,546	4,005	99,289	3,757	101,722	3,736	93,837
Mexico.....	93,438	83,131	.....	170,000	13,375	190,766	.....	.....
Roumania.....	27,721	19,598	5,247	70,138	4,908	103,665	5,152	.....
Russia.....	30,912	25,920	3,784	39,598	.....	77,181	.....	81,899
Servia.....	25,938	9,498	1,383	27,558	1,445	27,500	.....	.....
South Africa.....	2,858	8,784	.....	20,000	.....	20,000	.....	.....
Spain.....	25,629	21,255	1,149	26,433	1,145	27,366	1,145	28,730
United States.....	2,078,144	2,467,481	98,383	2,552,190	104,035	2,886,260	105,825	2,531,488
COTTON (bales):								
Brazil.....	.....	220	.....	265	.....	270	.....	.....
China.....	.....	1,200	.....	1,200	.....	1,200	.....	.....
Egypt.....	.....	1,305	.....	1,045	.....	1,570	.....	.....
India.....	.....	3,727	.....	4,374	.....	3,874	.....	.....
Mexico.....	.....	253,271	.....	200	.....	200	.....	.....
Persia.....	.....	71,509	.....	128	.....	128	.....	.....
Peru.....	.....	45,672	.....	110	.....	115	.....	.....
Russia.....	.....	504	.....	418	.....	688	.....	.....
Turkey.....	.....	66	.....	141	.....	141	.....	.....
United States.....	.....	13,439	.....	10,005	.....	11,608	.....	.....
HOPS (lb.):								
Australasia.....	1,299	.....	.....	2,206	.....	2,023	.....	2,638
Austria-Hungary..	34,313	.....	.....	20,577	.....	38,110	.....	23,200
Belgium.....	12,655	.....	.....	3,861	.....	6,300	.....	5,700
France.....	4,598	.....	.....	5,029	.....	7,126	.....	4,950
Germany.....	73,295	.....	.....	13,356	.....	44,998	.....	23,430
Russia.....	7,390	.....	.....	8,267	.....	6,500	.....	10,500
United Kingdom..	74,079	.....	.....	24,022	.....	33,900	.....	36,739
United States.....	43,200	.....	.....	50,697	.....	49,634	.....	40,000
OATS (bu.):								
Argentina.....	.....	1,564	.....	31,984	1,414	36,483	1,980	47,193
Austria-Hungary..	192,964	177,523	7,723	274,392	7,598	223,607	7,770	257,494
Canada.....	129,753	202,827	9,302	375,558	9,864	343,665	9,219	369,949
Denmark.....	37,500	40,000	.....	42,170	.....	40,596	.....	49,830
France.....	273,305	261,264	9,702	331,183	9,763	290,776	9,930	305,370
Germany.....	474,179	477,852	10,650	628,718	10,599	544,287	10,693	530,764
Russia.....	995,305	1,081,034	46,268	1,145,387	47,349	1,045,991	.....	858,356
Sweden.....	53,698	50,117	1,994	69,292	1,970	75,238	.....	63,462
United Kingdom..	169,661	191,565	4,017	184,370	4,094	191,438	4,050	177,163
United States.....	796,178	894,596	35,159	1,007,129	37,548	1,186,341	37,763	922,298
POTATOES (bu.):								
Austria-Hungary..	.....	639,407	.....	682,927	.....	689,980	.....	.....
Belgium.....	.....	82,846	.....	90,358	.....	90,358	.....	.....
Canada.....	.....	74,746	.....	99,085	.....	74,048	.....	.....
France.....	.....	375,000	.....	613,041	.....	313,189	.....	.....
Germany.....	.....	1,702,803	.....	1,716,143	.....	1,597,174	.....	.....
Italy.....	.....	29,000	.....	63,273	.....	56,550	.....	.....
Netherlands.....	.....	96,695	.....	97,275	.....	88,376	.....	.....
Russia.....	.....	1,082,723	.....	1,204,528	.....	1,343,268	.....	.....
Spain.....	.....	84,000	.....	84,000	.....	91,014	.....	.....
Sweden.....	.....	78,020	.....	61,981	.....	68,591	.....	.....
United Kingdom..	.....	265,713	.....	256,752	.....	236,991	.....	.....
United States.....	.....	278,985	.....	389,196	.....	349,032	.....	.....

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES—Continued

	1899 Production (000 omitted)	1904 Production (000 omitted)	1909 (000 omitted)		1910 (000 omitted)		1911 (000 omitted)	
			Acres	Production	Acres	Production	Acres	Production
RICE (lb.):								
Egypt.....		141,000		630,894		663,556		
Formosa.....		2,598,100		2,892,000		2,892,000		
French Indo China.....		5,000,000		5,000,000		5,000,000		
India.....	58,905,100	72,325,000		88,961,000		88,474,000		
Italy.....	1,122,368	760,500		647,000		596,031		
Japan.....	13,481,647	18,658,700		16,375,000		14,562,000		
Java and Madura.....		6,431,000		7,566,000		7,566,000		
Korea.....		3,200,000		3,200,000		3,200,000		
Madagascar.....				953,000		953,000		
Philippine Islands.....		544,000		1,048,000		1,048,000		
Siam.....		6,824,000		6,824,000		6,824,000		
Spain.....	385,000	394,600		456,900		465,431		
United States.....	136,990	619,400		710,289		714,233		
RYE (bu.):								
Austria-Hungary..	125,315	138,009	7,820	162,052	7,979	161,336	7,955	157,181
Belgium.....	22,000	22,000	636	23,154		22,085		23,089
Bulgaria.....	10,000	13,000	498	6,906	561	9,045		10,000
Canada.....	2,823	2,995	91	1,715	84	1,544	142	2,694
Denmark.....	18,000	18,000		18,922		19,565		19,713
Finland.....				12,085		11,000		11,000
France.....	68,255	53,343	3,031	54,934	2,994	44,064	2,923	46,615
Germany.....	341,551	396,075	15,149	446,767	15,287	413,802	15,161	427,776
Netherlands.....	11,500	14,000	553	17,652	548	15,126	555	17,410
Russia.....	911,631	1,008,381	71,983	896,833	71,049	867,626		762,109
Spain.....	15,000	19,000	2,058	34,901	2,029	27,596	1,987	28,897
Sweden.....	21,436	20,960	998	25,728	997	24,154	992	23,825
United States.....	23,962	27,242	2,196	29,520	2,185	34,897	2,127	33,119
SUGAR, CANE (long tons):								
Australia.....	191	113		165		147		229
Brazil.....	151	197		244		249		282
Cuba.....	345	1,040		1,521		1,817		1,500
India.....	10	15		1,872		2,127		2,226
Java.....	689	885		1,222		1,222		1,234
Mauritius.....	186	215		192		248		219
United States.....	299	673		1,072		1,040		1,108
BEET (long tons):								
Austria-Hungary..				1,365		1,225		1,498
Belgium.....	244	203		243		235		267
France.....	830	804		701		711		630
Germany.....	1,721	1,927		2,046		2,005		2,548
Netherlands.....				194		178		213
Russia.....	776	1,206		1,109		1,002		1,881
United States.....	32	208		380		447		456
TOBACCO (lb.):								
Austria-Hungary..		111,815		190,274		184,817		
Brazil.....		52,832		64,654		75,285		
Cuba.....		42,421		59,323		46,081		
Dutch East Indies.....		90,125		134,100		128,669		
Germany.....		75,797		62,120		63,611		
India.....		450,000		450,000		450,000		
Japan.....		106,075		92,682		92,682		
Philippine Islands.....		33,100		40,258		40,258		
Russia.....		204,298		194,948		200,773		
Santo Domingo.....				30,000		42,000		
Turkey (European).....				49,177		49,177		
United States.....		665,461		1,065,765		1,113,415		
WHEAT (bu.):								
Argentina.....	92,167	120,598	14,981	156,162	14,422	131,010	15,451	145,981
Austria-Hungary..	191,842	203,998	11,945	186,076	12,634	241,394	12,356	252,061
Australasia.....	56,212	84,627	5,514	73,612	6,897	102,271	7,588	106,644
Canada.....	59,960	76,427	7,750	166,744	9,294	149,990	10,374	215,851
France.....	366,079	296,606	16,299	356,193	16,198	257,667	15,903	315,444
Germany.....	141,369	139,803	4,525	138,000	4,800	141,884	4,878	149,411
India.....	232,585	357,162	26,149	284,361	28,017	358,049	29,554	369,630
Italy.....	137,912	150,400	11,635	189,959	11,758	153,168	11,741	192,395
Roumania.....	26,064	53,738	4,173	56,751	4,814	110,761	4,769	90,886
Russia.....	487,234	706,706	65,414	783,270	71,062	775,695		509,491
Spain.....	88,000	110,000	9,347	144,105	9,413	137,448	9,705	148,495
United Kingdom.....	69,325	39,083	1,867	65,188	1,856	58,322	1,951	66,289
United States.....	547,304	552,400	44,261	683,350	45,681	635,121	49,543	621,353

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, 1899-1912

(Yearbook of the Department of Agriculture)

	1899 (census)	1904	1909 (census)	1910	1911	1912*
TOTAL (000 omitted):						
Barley (bu.)	119,635	139,749	173,321	173,832	160,240	223,824
Buckwheat (bu.)	11,234	15,008	14,849	17,598	17,549	19,249
Corn (bu.)	2,666,324	2,467,481	2,552,190	2,886,260	2,531,488	3,124,746
Cotton (lb.)	4,467,096	6,426,697	4,783,220	5,551,790	7,506,430	6,612,335
Flaxseed (bu.)	19,979	23,401	19,513	12,718	19,370	28,073
Hay (tons)	57,002	60,696	64,938	69,378	54,916	72,691
Hops (lb.)	49,209	49,358	50,697	49,634	40,000	.....
Oats (bu.)	943,389	894,596	1,007,353	1,186,341	922,298	1,418,337
Potatoes (bu.)	273,318	332,830	389,195	349,032	292,737	420,647
Rice (bu.)	.....	21,096	24,368	24,510	22,934	25,054
Rye (bu.)	25,569	27,242	29,520	34,897	33,119	35,664
Sugar (long tons)	690	988	1,563	1,660	1,711	1,923
Tobacco (lb.)	868,113	660,461	1,055,765	1,103,415	905,109	962,855
Wheat (bu.)	658,534	552,400	683,350	635,121	621,338	730,267
AVERAGE PER ACRE:						
Barley (bu.)	26.8	27.2	22.5	22.5	21.0	29.7
Buckwheat (bu.)	13.9	18.9	16.9	20.5	21.1	22.9
Corn (bu.)	28.1	26.8	25.9	27.7	23.9	29.1
Cotton (lb.)	184.1	204.9	154.3	170.7	208.2	193.2
Flaxseed (bu.)	9.5	10.3	9.4	5.2	7.0	9.8
Hay (tons)	1.09	1.52	1.42	1.33	1.1	1.5
Oats (bu.)	31.9	32.1	30.3	31.6	24.2	37.4
Potatoes (bu.)	93.0	110.4	106.1	93.8	80.9	113.3
Rice (bu.)	.....	31.9	33.8	33.9	32.9	34.6
Rye (bu.)	12.4	15.2	13.4	16.0	15.6	16.8
Tobacco (lb.)	788.5	819.0	815.3	807.7	893.7	785.5
Wheat (bu.)	12.5	12.5	15.4	13.9	12.5	15.1

* Final estimate issued December 16.

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1899-1911

(Yearbook of the Department of Agriculture)

	1899		1904		1909		1910		1911	
	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)
BARLEY (bu.):										
California	26	22,239	22.7	28,091	26.5	31,270	31.0	43,400	28.0	40,600
Idaho	35	405	37.4	1,707	40.0	2,480	33.0	2,146	42.0	5,964
Iowa	26	12,011	27.8	13,552	22.0	10,890	29.5	15,045	21.9	10,950
Minnesota	25	8,144	28.4	32,123	23.6	31,600	21.0	26,985	19.0	28,025
N. Dakota	24	5,909	28.1	17,518	21.0	20,727	5.5	5,428	19.5	20,475
S. Dakota	23	2,410	28.0	9,787	19.5	19,910	18.2	18,655	5.4	5,508
Washington	35	1,410	34.8	5,824	39.5	7,189	29.0	5,394	37.0	6,512
Wisconsin	30	7,670	30.0	14,941	28.0	24,248	25.9	22,429	25.5	20,910
CORN (bu.):										
Alabama	12.0	33,015	15.0	41,877	13.5	30,696	18.0	51,300	18.0	54,000
Georgia	10.0	32,494	11.9	47,234	13.9	39,375	14.5	51,982	16.0	59,072
Illinois	36.0	247,150	36.5	344,133	36.9	390,219	39.1	400,775	33.0	334,950
Indiana	38.0	141,852	31.5	143,396	40.0	195,496	39.3	188,640	36.0	174,600
Iowa	31.0	242,249	32.6	303,039	31.5	341,750	36.3	343,761	31.0	305,350
Kansas	27.0	237,621	20.9	134,609	19.9	154,652	19.0	170,050	14.5	126,150
Kentucky	21.0	55,392	26.9	86,515	29.0	83,348	29.0	101,500	26.0	93,600
Michigan	25.0	26,476	28.6	36,990	35.4	52,907	32.4	54,108	33.0	55,770
Minnesota	33.0	31,171	26.9	41,809	34.8	67,807	32.7	66,708	33.7	74,140
Mississippi	16.0	39,043	19.1	39,709	14.5	28,429	20.5	53,095	19.0	54,150
Missouri	26.0	162,915	26.2	151,522	26.4	191,427	33.0	247,500	26.0	192,400
Nebraska	28.0	224,373	32.8	260,942	24.8	180,133	25.8	191,565	21.0	155,925
Ohio	36.0	99,048	32.5	99,628	39.5	157,513	36.5	144,540	38.6	150,540
Penn'a/Inia	32.0	40,255	34.0	48,535	32.0	41,494	41.0	58,630	44.5	63,558
S. Dakota	26.0	30,017	28.1	43,855	31.7	55,559	25.0	52,600	22.0	50,830
Tennessee	20.0	59,997	25.0	80,890	22.0	67,682	25.9	88,060	26.8	91,120
Texas	18.0	81,151	22.6	136,702	15.0	75,499	20.6	140,080	9.5	69,350
Wisconsin	35.0	41,686	29.7	45,119	33.0	49,163	32.5	49,400	36.3	58,080

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1899-1911—Continued.

	1899		1904		1909		1910		1911	
	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)	Av. per Acre	Total (000 omit- ted)
CORRIN (b'les):										
Alabama . . .	.39	1,176	.36	1,448	.28	1,024	.32	1,194	.40	1,716
Georgia . . .	.39	1,378	.41	1,887	.36	1,804	.34	1,767	.48	2,768
Mississippi . .	.43	1,247	.44	1,798	.31	1,083	.36	1,262	.34	1,203
N. Carolina . .	.48	629	.46	703	.42	600	.45	706	.63	1,075
Oklahoma . . .	.50	109	.49	335	.29	544	.40	923	.32	1,022
S. Carolina . .	.44	1,035	.43	1,151	.42	1,099	.43	1,163	.56	1,648
Texas . . . . .	.48	3,363	.36	3,145	.25	2,522	.29	3,049	.37	4,266
HAY (tons):										
Iowa	1.34	5,025	1.62	5,074	1.64	5,983	1.05	3,707	.80	2,592
Michigan . . .	1.22	1,650	1.25	2,658	1.30	3,403	1.30	3,370	1.16	2,797
New York . . .	1.04	4,530	1.36	6,480	1.05	5,002	1.32	6,351	1.02	4,858
Ohio	1.30	2,133	1.43	3,880	1.43	4,033	1.39	3,948	1.39	2,505
Penns'lv'nia . .	1.20	3,068	1.45	4,499	1.20	3,742	1.38	4,433	1.00	3,148
Wisconsin . . .	1.47	1,946	1.67	2,959	1.53	3,625	1.00	2,260	1.20	2,495
OATS (bu.):										
Illinois	38.0	127,278	32.0	117,341	36.8	150,386	38.0	164,350	28.8	121,536
Iowa	33.0	126,985	32.0	122,323	27.0	128,198	37.8	192,780	25.5	126,225
Ohio	36.0	32,945	40.9	49,733	32.5	57,591	37.2	65,844	32.1	54,570
Minnesota . . .	32.0	52,688	39.2	85,178	33.0	93,898	28.7	85,440	22.8	67,214
N. Dakota . . .	30.0	17,987	37.4	31,010	32.0	65,887	7.0	15,155	23.5	51,230
Wisconsin . . .	36.0	67,687	35.0	86,734	35.0	71,336	29.8	67,050	29.8	67,050
POTATOES (bu.):										
Iowa	100.0	19,847	136.0	22,354	89.0	12,905	72.0	12,240	74.0	12,876
Maine	139.0	6,514	215.0	19,657	225.0	29,250	220.0	27,940	180.0	21,240
Michigan	66.0	11,430	121.0	31,806	105.0	36,540	105.0	35,175	94.0	31,020
Minnesota . . .	96.0	10,888	102.0	13,995	115.0	18,400	61.0	10,065	115.0	25,875
New York	88.0	28,707	93.0	41,129	120.0	52,560	102.0	44,676	74.0	27,750
Ohio	71.0	11,505	98.0	16,029	93.0	16,926	82.0	14,924	65.0	12,350
Penns'lv'nia . .	85.0	15,243	106.0	27,174	78.0	23,780	88.0	28,160	56.0	15,120
Wisconsin . . .	103.0	16,102	126.0	31,499	102.0	26,724	95.0	24,700	116.0	32,480
RICE (lb.):										
Arkansas					40.0	1,120	40.0	2,400	39.0	2,792
Louisiana			30.4	11,445	33.8	12,675	34.4	12,769	31.5	11,693
Texas			35.5	8,314	34.0	9,894	33.0	8,738	34.3	8,174
RYE (bu.):										
Indiana	13.0	464	14.6	478	16.5	940	15.8	869	13.7	1,000
Michigan	14.0	1,097	13.2	1,752	15.5	5,425	15.3	5,355	14.6	5,840
Minnesota . . .	18.0	1,112	17.7	1,648	19.0	2,280	17.0	1,955	18.7	4,488
New Jersey . . .	15.0	1,000	17.5	1,224	16.8	1,288	18.0	1,530	16.4	1,181
New York	16.0	3,633	14.8	2,177	17.0	2,720	18.3	3,111	16.7	2,254
Penns'lv'nia . .	15.0	3,936	15.5	5,367	15.3	5,508	17.0	6,460	15.1	4,304
Wisconsin . . .	15.0	3,073	16.2	4,905	16.3	4,727	16.0	4,880	17.0	6,035
TOBACCO (lb.):										
Connecticut . . .			1,685	21,407	1,650	22,110	1,730	23,182	1,625	27,625
Indiana			691	4,314	950	19,000	880	23,760	910	20,030
Kentucky			627	229,417	835	350,700	810	381,024	880	303,600
Maryland			621	19,913	710	17,750	690	19,665	735	19,110
N. Carolina . . .			685	98,618	600	144,000	600	129,600	710	99,400
Ohio			849	50,793	925	83,250	810	75,087	925	81,400
Penns'lv'nia . . .			1,289	18,635	985	30,732	1,500	49,500	1,420	65,320
S. Carolina . . .			703	8,185	800	32,000	630	18,900	810	11,016
Tennessee			730	34,823	730	53,290	760	64,600	810	62,370
Virginia			725	96,487	775	120,125	780	124,800	800	128,000
W. Virginia . . .			710	2,901	875	12,600	640	12,800	750	11,250
Wisconsin			1,282	52,473	1,180	37,170	1,050	31,710	1,250	51,250
WHEAT (bu.):										
Illinois	10.0	12,665	13.8	21,542	17.4	31,494	15.0	31,500	16.0	42,000
Indiana	9.8	25,361	9.2	12,525	15.3	33,124	15.6	40,981	14.7	34,354
Kansas	9.8	36,468	12.4	65,019	14.4	87,203	14.0	62,068	10.7	51,387
Michigan	8.4	13,335	9.8	6,873	18.8	14,570	18.0	15,642	18.0	18,450
Minnesota	13.4	68,223	12.8	68,344	16.3	94,080	16.0	94,080	10.1	43,935
Missouri	9.9	11,398	17.7	27,163	14.7	28,562	13.8	25,130	15.7	36,110
Nebraska	10.3	20,791	13.6	31,453	18.8	49,650	16.1	39,515	13.4	41,574
N. Dakota	12.8	61,758	11.8	53,892	13.7	90,762	5.0	36,105	8.0	73,200
Ohio	14.2	39,998	11.5	17,563	15.9	23,532	16.2	31,493	16.0	36,240
Penns'lv'nia . . .	13.6	20,472	14.1	21,857	17.0	26,265	17.8	27,697	13.5	17,402
Washington . . .	22.7	21,710	22.2	32,140	23.2	35,780	17.2	25,603	22.7	50,661

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS, 1899-1912

(Yearbook of the Department of Agriculture)

(000 omitted)

	1899	1904	1909	1910	1911	1912
IMPORTS						
Total, excluding Forest Products.....	\$355,514	\$461,434	\$638,612	\$687,509	\$680,204	\$784,378
Animal matter:						
Cattle.....	2,320	310	1,999	2,999	2,953	4,805
Horses.....	551	1,460	2,007	3,296	2,692	1,923
Sheep.....	1,200	815	502	696	377	157
Other animals including fowls.....	265	543	528	846	828	694
Butter.....	3	34	141	298	247	237
Cheese.....	1,563	3,284	5,866	7,053	7,920	8,807
Cream.....				577	1,873	
Milk.....	52	32	23	63	75	985
Eggs.....	21	61	36	110	225	
Silk.....	32,479	46,100	79,903	67,129	74,998	69,541
Wool.....	8,322	24,813	45,171	51,220	23,228	33,078
Packing-house products:						
Hides and skins.....	41,988	52,006	78,487	112,247	70,504	102,476
Meat.....	467	935	796	1,214	1,342	1,358
Vegetable matter:						
Cocoa.....	5,360	9,174	15,222	11,692	14,552	15,931
Chocolate.....	201	426	339	274	708	
Coffee.....	55,275	69,551	79,112	69,194	90,567	117,836
Vegetable fibers:						
Cotton.....	5,013	8,541	13,622	15,816	24,776	20,217
Flax.....	1,306	2,541	2,542	3,536	2,668	3,778
Hemp.....	477	869	799	1,039	938	1,100
Jute.....	2,296	4,104	7,216	3,728	4,718	7,183
Manila.....	6,211	11,423	7,156	10,517	8,622	8,000
Sisal grass.....	9,211	15,935	10,215	11,440	12,092	11,866
Fruits.....	15,586	18,964	22,446	24,177	27,017	29,549
Grain.....	64	141	2,879	551	518	3,314
Wheat flour.....	4	164	446	681	625	665
Hay.....	115	914	60	775	2,544	6,473
Hops.....	591	1,374	1,337	1,499	2,706	2,231
Distilled spirits.....	3,145	4,957	7,676	7,113	6,076	6,463
Malt liquors.....	1,487	2,313	3,215	3,263	3,396	3,279
Wines.....	6,590	9,391	12,276	13,007	8,531	9,591
Nursery stock.....	768	1,496	1,946	2,361	2,755	3,002
Nuts.....	2,727	5,471	8,664	13,246	14,498	15,828
Oils, vegetable.....	5,300	10,225	17,554	22,982	29,715	26,845
Rice, rice meal, etc.....	3,930	3,073	4,698	4,361	4,124	4,435
Sago, tapioca, etc.....		695	1,396	900	1,590	1,674
Seeds.....	1,221	3,587	5,958	14,693	29,757	25,641
Spices.....	2,782	4,366	5,348	3,483	4,946	5,974
Sugar.....	94,964	71,915	96,554	106,349	96,691	115,515
Tea.....	9,675	18,229	18,562	13,671	17,613	18,207
Tobacco.....	9,900	16,939	25,405	27,753	27,865	31,918
Vegetables.....	2,178	7,008	12,999	8,273	9,293	18,544
EXPORTS						
Total, excluding Forest Products.....	792,811	859,160	903,238	871,158	1,030,794	1,044,500
Animal matter:						
Cattle.....	30,516	42,256	18,046	12,200	13,163	8,870
Fowls.....	(1)	(1)	115	137	(1)	(1)
Horses.....	5,444	3,189	3,386	4,081	3,845	4,764
Mules.....	516	412	472	614	1,070	732
Sheep.....	853	1,954	365	209	636	626
Swine.....	227	53	144	46	74	159
Other live animals.....	322	111	114	158	259	294
Butter.....	3,263	1,768	1,268	785	1,059	1,468
Cheese.....	3,316	2,452	857	441	1,288	898
Milk, condensed.....	1,049	1,367	1,375	1,023	936	1,651
Eggs.....	641	396	1,199	1,260	1,787	
Packing-house products:						
Beef, canned.....	3,503	5,882	1,645	1,678	1,254	1,303
Beef, cured.....	2,671	3,281	3,472	2,783	3,501	2,832
Beef, fresh.....	23,545	26,841	12,698	7,733	4,478	1,671
Hides and skins.....	929	3,246	1,271	1,738	4,802	3,158
Lard.....	42,208	46,347	52,712	43,301	52,509	52,090
Lard compounds.....		3,581	6,115	6,887	7,070	5,183
Pork, cured.....	7,917	56,268	54,046	40,640	46,864	
Pork, fresh.....	2,722	1,669	938	126	159	297

(1) Included in "Other live animals."

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS, 1899-1912

—Continued

(Yearbook of the Department of Agriculture)

(000 omitted)

	1899	1904	1909	1910	1911	1912
EXPORTS—Continued						
Vegetable matter:						
Cotton.....	\$210,080	\$372,049	\$417,390	\$450,447	\$585,318	\$565,849
Fruits.....	7,757	20,348	18,079	18,504	23,893	30,354
Barley.....	1,375	6,292	4,672	3,052	5,381	1,267
Buckwheat.....	846	19	137	103		
Corn.....	68,977	30,071	25,194	25,427	35,961	28,957
Oats.....	9,787	475	804	794	832	1,135
Rye.....	5,936	440	1,049	168	2	4
Wheat.....	104,269	35,850	68,094	47,806	22,040	28,477
Cornmeal.....	1,775	1,691	1,549	1,147	1,456	1,519
Oatmeal.....	1,295	463	516	521	1,043	876
Wheat flour.....	73,093	68,894	51,157	47,621	49,386	50,999
Total grain products.....	273,999	76,215	160,076	133,320	124,262	
Hops.....	3,626	2,116	1,271	2,062	2,130	4,648
Distilled spirits.....	2,080	1,691	1,883	1,978	1,885	2,274
Malt liquors.....	1,888	854	1,010	951	1,075	1,161
Oil cake.....	14,548	17,069	25,836	19,251	19,631	28,096
Vegetable oils.....	13,809	12,618	23,098	16,479	19,805	26,908
Seeds.....	5,079	2,583	5,256	3,485	2,475	2,898
Sugar.....	440	532	2,785	5,398	2,244	3,681
Tobacco.....	25,467	29,640	30,902	38,115	39,255	43,251
Vegetables.....	2,799	2,603	3,760	4,207	5,545	6,544

AVERAGE PRICES OF AGRICULTURAL PRODUCTS, 1899-1912

(Yearbook of the Department of Agriculture)

	1899	1904	1909	1910	1911	1912
FARM CROPS: ¹						
Barley (bu.).....	\$0.40	\$0.42	\$0.55	\$0.57	\$0.86	\$0.50
Beans (bu.) ²	1.72-2.20	2.25-2.75	2.25-2.70	2.05-2.85		
Buckwheat (bu.).....	0.55	0.62	0.69	0.66	0.72	0.66
Corn (bu.).....	0.30	0.44	0.59	0.48	0.61	0.48
Cotton (lb.).....	0.071		0.139	0.142	0.083	0.119
Flaxseed (bu.).....		0.99	1.52	2.30	1.82	1.14
Hay (tons).....	7.27	8.72	10.62	12.26	14.64	11.79
Hops (lb.) ³	0.12-0.18	0.32-0.41	0.12-0.39	0.21-0.35	0.23-0.57	0.09
Oats (bu.).....	0.24	0.31	0.40	0.34	0.45	0.31
Potatoes (bu.).....	0.39	0.45	0.54	0.55	0.79	0.50
Rice (bu.).....		0.65	0.79	0.67	0.79	
Rye (bu.).....	0.51	0.68	0.73	0.71	0.83	0.66
Tobacco (lb.).....		0.081	0.101	0.093	0.094	
Wheat (bu.).....	0.58	0.92	0.99	0.88	0.87	0.76
LIVE STOCK: ⁴						
Cattle:						
Beef ⁵	2.00-7.00	1.70-7.65	2.90-9.50	2.90-8.85	2.50-9.35	
Milk cows.....	29.66	29.21	32.36	25.79	39.97	39.39
Other cattle.....	22.79	16.32	17.49	19.41	20.54	21.20
Horses.....	37.40	67.93	95.64	108.19	111.46	105.94
Mules.....	44.96	78.88	107.84	119.84	125.92	120.51
Sheep.....	2.75	2.59	3.43	4.08	3.91	2.46
Swine.....	4.40	6.15	6.55	9.14	9.37	8.00
LIVE STOCK PRODUCTS:						
Butter (lb.) ⁶	0.16½- 0.28	0.17½- 0.28	0.25-0.37	0.27½- 0.35	0.19½- 0.39	
Eggs (dos.) ⁷	0.12½- 0.35	0.16-0.47	0.19-0.55	0.22-0.55	0.17-0.60	

¹ Average farm prices Dec. 1. ² Average wholesale prices at Boston. ³ Average wholesale prices at New York. ⁴ Prices per head, Jan. 1. ⁵ Average wholesale prices of inferior to prime beef per 100 lb. at Chicago. ⁶ Average wholesale prices of extra creamery butter at New York. ⁷ Average wholesale prices of average best fresh eggs at New York.

XIX. AGRICULTURE, HORTICULTURE, FORESTRY, AND FISHERIES . . . . .	450

LIVE STOCK IN THE UNITED STATES,

1899-1912

(Yearbook of the Department of Agriculture)
(000 omitted)

	Number Jan. 1, 1900	Number Jan. 1, 1905	Number Jan. 1, 1910	Number Jan. 1, 1911	Number Jan. 1, 1912
MILCH COWS:					
Total, U. S.	16,292	17,572	21,801	20,823	20,699
Illinois	1,021	995	1,232	1,060	1,049
Iowa	1,263	1,335	1,570	1,407	1,393
Michigan	463	556	936	798	806
Minnesota	672	836	1,125	1,085	1,107
Missouri	659	569	925	856	822
New York	1,487	1,721	1,771	1,510	1,495
Ohio	780	790	947	898	887
Pennsylvania	970	1,086	1,140	953	943
Texas	693	838	1,137	1,034	1,034
Wisconsin	1,003	1,095	1,506	1,489	1,504
OTHER CATTLE:					
Total, U. S.	27,610	43,669	47,279	39,679	37,260
California	604	1,122	1,120	1,546	1,515
Illinois	1,303	1,666	1,974	1,391	1,266
Iowa	2,178	3,467	3,611	2,919	2,773
Kansas	2,159	2,682	3,260	2,202	1,872
Minnesota	564	941	1,228	1,224	1,151
Missouri	1,387	1,490	2,165	1,671	1,504
Nebraska	1,521	2,379	3,040	2,225	2,002
Oklahoma	283	1,284	1,637	1,395	1,242
Texas	4,352	8,249	7,131	5,507	5,177
Wisconsin	595	1,148	1,081	1,146	1,146
HORSES:					
Total, U. S.	13,538	17,058	21,040	20,277	20,509
Illinois	983	1,232	1,655	1,482	1,497
Indiana	577	636	847	830	838
Iowa	979	1,144	1,447	1,537	1,568
Kansas	732	880	1,187	1,181	1,169
Minnesota	459	688	767	783	806
Missouri	724	809	1,005	1,084	1,095
Nebraska	658	795	1,045	1,038	1,059
Ohio	640	785	977	910	901
Oklahoma	50	354	804	765	750
Texas	1,125	1,277	1,369	1,147	1,158
MULES:					
Total, U. S.	2,086	2,889	4,123	4,323	4,362
Alabama	132	161	253	257	265
Georgia	157	201	248	304	310
Mississippi	164	219	290	266	277
Oklahoma	9	62	191	278	272
Tennessee	139	163	290	276	279
Texas	260	391	702	696	703
SHEEP:					
Total, U. S.	41,883	45,170	57,216	53,633	52,362
Arizona	1,024	816	1,020	1,411	1,510
California	2,001	2,180	2,372	2,683	2,656
Colorado	2,185	1,458	1,729	1,611	1,579
Idaho	2,658	2,978	4,248	2,951	2,951
Michigan	1,389	1,759	2,151	2,421	2,276
Missouri	597	770	957	1,847	1,755
Montana	3,884	5,638	5,747	5,220	5,011
New Mexico	3,973	2,856	4,729	3,113	3,330
Ohio	2,839	2,601	3,203	4,104	3,694
Oregon	2,446	2,546	2,581	2,672	2,592
Texas	2,416	1,617	1,909	1,954	2,032
Utah	2,370	2,344	3,177	2,010	1,990
Wyoming	2,840	3,267	7,316	5,019	4,969
SWINE:					
Total, U. S.	37,079	47,321	47,782	65,620	65,410
Georgia	1,396	1,647	1,873	2,098	
Illinois	3,747	3,772	5,155	4,640	
Indiana	2,631	2,578	4,156	4,031	
Iowa	7,290	6,485	9,055	9,689	
Kansas	1,949	1,942	3,600	2,808	
Missouri	3,110	2,714	4,882	4,491	
Nebraska	2,888	3,201	3,951	4,267	
Ohio	2,701	2,047	3,727	3,578	
Texas	2,525	3,205	2,570	2,544	
Wisconsin	1,653	1,651	1,899	2,051	

AGRICULTURAL STATISTICS FROM

CENSUS OF 1910

(Yearbook of the Department of Agriculture)

	Total	Per- cent- age
Land area (acres)	1,903,290,000	.....
Farms (acres)	878,798,000	46.2
Improved (acres)	478,452,000	54.5
Woodland (acres)	190,866,000	21.7
Other unimproved (acres)	209,481,000	23.8
Number of farms	6,361,502	.....
Average area per farm (acres)	138.1	.....
Average area of im- proved land per farm (acres)	75.2	.....
Farms under 20 acres		13.2
Farms of 20 to 99 acres		44.8
Farms of 100 to 499 acres		39.2
Farms of 500 to 1,000 acres and over		2.8
Value of crops of Con- tinental U. S.	\$5,487,000,000	.....
Value of all farm prop- erty*	\$40,991,374,000	200.5
Value of land	28,475,674,000	218.1
Value of buildings	6,325,452,000	177.8
Value of implements and machinery	1,265,150,000	168.7
Value of animals, poultry and bees	4,925,098,000	160.1
Value of all property represented in—		
Lands		69.5
Buildings		15.4
Implements and machinery		3.1
Animals, poultry and bees		12.0
Average value per farm of—		
All property	\$6,444	.....
Lands and build- ings only	5,471	.....
Average value of land per acre	14.96	.....
FARM EXPENSES		
Labor:		
Farms reporting	2,922,288	.....
Percent. of all farms Cash expended	\$521,727,000	45.9
Rent and board fur- nished	129,878,000	.....
Feed:		
Farms reporting	2,368,905	.....
Percent. of all farms Amount expended	\$299,839,000	37.2
Fertilizer:		
Farms reporting	1,823,032	.....
Percent. of all farms Amount expended	\$114,884,000	28.7
NATIVITY OF FARM OPERATORS		
Number of farms oper- ated by—		
Native white	4,771,063	.....
Foreign white	669,556	.....
Negro and other non-white	920,883	.....
Percentage of operators who own their farm among—		
Native white		66.3
Foreign white		81.4
Negro and other non-white		26.2

*Percentages indicate increase, 1899-1909.

XX. THE MINERAL INDUSTRIES

MINING AND ORE DRESSING

CHARLES E. LOCKE

The Mining Industry.—Compared with 1911 the year 1912 shows a distinct improvement in the mining industry. The steel production for the whole year is not yet available, but for the first half of the year it broke all records. Lead and zinc prices have ruled high and have stimulated production. Copper has been considerably higher in price, and the stocks on hand have shown a material decrease. Wages have been good. At Butte, for example, a three-years' contract has been made with the Mill and Smeltermen's Union for an increase of 25 cents per day when copper is above 15 cents per pound.

Mexico.—The peace in Mexico was not of long standing, and the newly elected president soon found himself with revolutions on his hands. Railroad communication has been more or less interrupted and the efficiency of mine labor considerably reduced. In spite of these factors the large companies have been able to operate almost continuously, although with lessened profit; but some of the smaller companies have been forced to suspend entirely. At the present writing the revolutions have largely degenerated into a sort of brigandage, which is a serious hindrance to progress.

Labor Troubles.—In the United States the anthracite coal industry was tied up by a strike in the spring, and has suffered also from a shortage of labor since resumption of operations. In the West, strikes in the fall in the copper camps of Bingham, Utah, and Ely, Nev., have affected the copper production somewhat. The strikers, although not victorious, received an advance in

wages, and the mines are again running normally. The shortage of unskilled labor has been felt in other districts, especially in the Lake Superior copper mines. (See also XVII, *Labor*.)

Mining Law.—The question of mining law is still unsettled, and the development of Alaska is still waiting. On Aug. 29 Secretary of the Interior Fisher cancelled the Cunningham claims for fraud, and this has been recorded by the register and receiver of the Juneau, Alaska, Land Office (see *AMERICAN YEAR BOOK*, 1911, p. 53). President Taft has gone on record as advocating some form of leasing system. The decision of the General Land Office in the East Tintic case of Sept. 11, 1911, that actual discovery of ore is necessary in locating a claim is a distinct setback to the development of new deposits. Other defects in the present law are the possibilities of tying up claims without doing actual work of development and the lack of opportunity of appeal from decisions of administrative officers of the government. Reforms may be made in the near future as committees have been appointed both by the American Mining Congress, and by the Mining and Metallurgical Society of America, to investigate the whole subject and report suggestions for changes.

Improvements in Methods.—An increased use of concrete is noticed. At Lake Superior the Ahmeek mine has introduced concrete sets in shaft timbering, and concrete shaft collars are coming more and more into vogue. The hand acetylene lamp has been developed to a point where it

can compete with the long used candles and oil lamps. Its low cost, cleanliness, and good light should rapidly increase its use. At the Franklin Junior mine at Lake Superior an innovation in hoisting has appeared. In an unbalanced hoist the descending empty skip serves to compress air which is used to help the steam in raising the load.

Bureau of Mines.—The work of the U. S. Bureau of Mines has been largely devoted to a study of fuels, mine explosions, rescue work in coal mines, prevention of waste, especially of natural and coke oven gas, and petroleum. Future plans are to give attention to the smelter-smoke question, safety appliances in metal mines as well as coal mines, miners' phthisis in metal mines, and laws and regulations for safety in metal mines. (See also *Coal and Coke, infra.*)

Copper.—Taking up the various districts it is found that at Lake Superior some of the older mines have come to the point where the end is in sight, and a decreased production is already at hand; but this is offset by the new producers which come forward especially at the recurrence of each copper boom.

In the Butte district of Montana the deepest workings at 2,800 ft. still show copper ore as good as that found above, and production bids fair to continue undiminished for years to come. Furthermore, the productive area is being gradually enlarged by new discoveries. The district is progressive and new economies result in a continual increase in efficiency.

The so called porphyry copper mines are mostly on a producing basis. Utah copper is treating 20,000 tons daily and recovering 20 lbs. of copper per ton; Nevada Consolidated 8,700 tons yielding 22.8 lbs; Chino 4,800 tons yielding about 28 lbs.; Ray Consolidated 4,500 tons yielding about 30 lbs., and Miami 3,000 tons yielding about 30 lbs. Inspiration is not so far advanced. Its ore blocked out is estimated at 45,000,000 tons averaging almost 2 per cent. copper, and its mill when completed is expected to handle 7,000 tons daily.

Gold and Silver.—At Cobalt, Ont., the expected peak of silver produc-

tion was apparently reached in 1911, as the government figures for the first half of 1912 show a decrease over the corresponding period of the previous year. However, some of the earlier mines have been reopened and a few put on the producing list, while others have the end apparently in sight. It is probable that the decline will be very gradual for the next five years. The Nipissing Company has erected high and low-grade mills, and will reduce all its silver to the form of bullion by the amalgamation and cyanide processes, and thus save freight and smelter charges on ore. (See also *Gold and Silver, infra.*)

In the Porcupine district of Ontario a steady output of gold is now coming from four mills. The Hollinger mill treats 500 tons per day, and the Dome mill 400 tons. Explorations to depths of 200 and 300 ft. indicate that the ore bodies still hold their richness. (See also *Gold and Silver, infra.*)

The reopening of the Comstock silver mines in Nevada has been rewarded by the discovery of new ore bodies. With the arrangements for coöperative pumping and systematic ventilation, it is expected that exploratory work will soon be proceeding at a depth of 3,000 ft. In the early part of the year the district was producing 15,000 tons monthly, of a value ranging between \$175,000 and \$225,000.

At Cripple Creek, in the early part of the year, the new Roosevelt drainage tunnel had attained a total length of about 16,000 ft. from the portal. The flow of water was 17,000 gals. per minute, and the mines were being rapidly drained so that the tunnel was considered to be finished. It took 18 months to drive it, and cost over \$500,000. It will drain the mines to a depth of 750 ft. below the level of the previous tunnel.

The outlook for the gold mines on the Rand in South Africa is not so encouraging. There is little new work under way, and some of the recently opened deep mines with their mills have not proved so profitable and successful as anticipated. Moreover, some of the older mines working on the outcrop are nearing their end. Statistics during the last

decade show a constant increase in tons milled and in gold recovered, but a decrease in grade. There was a decrease in costs per ton up to 1911, and a slight increase since then. The dividends showed an increase up to 1909 and a decrease in 1910 and 1911.

A consideration of the gold production of the world indicates that it is near its zenith, and the figures of 1912 may show a decrease. (See *Statistics of Mineral Production, infra.*)

Ore Dressing.—In ore dressing a new flotation process called the Leuschner has been installed at the Ludwigseck mine in Westphalia to treat zinc ores. Oil and sulphuric acid are used, the latter to help flotation by the generation of gas from carbonates in the ore. Exhaust steam is also used as a source of heat to promote the flotation action.

More attention is being devoted to the saving of losses in slimes and at the Nevada Consolidated mill at

Ely, Nevada, special new slime tables have been installed for this purpose.

In South Africa the Sands Limited Company has been formed to treat the old gold tailings on the Rand. These are to be classified, reground and cyanided, and it is expected that large-scale operations will show a good profit. (See also *Gold and Silver, infra.*)

Bibliography.—Among the books that have appeared during the year are the following: *Graphical Solution of Fault Problems*, by C. F. Tolman, Jr.; *Stamp Milling*, by A. Del Mar; *Types of Ore Deposits*, edited by H. F. Bain; *History of the Precious Metals from the Earliest Time to the Present*, 2nd ed., by Alex. Del Mar; *Rock Drilling, with Particular Reference to Open Cut Excavation and Submarine Rock Removal*, by R. T. Dana and W. L. Saunders; *Text Book of Rand Metallurgical Practice*, vol. I; *Design of Mine Structures*, by M. S. Ketchum.

COAL AND COKE

FLOYD W. PARSONS

Coal Production.—In 1860, the product of all American mines at the pit's mouth had a total value of \$500,000,000. Of this amount the coal output was \$20,000,000, or 4 per cent. In 1912, the product of all the mines in the United States had a value of \$1,600,000,000, while of this enormous total, the coal and coke production was approximately \$800,000,000, or 50 per cent.

From an annual production of 16,000,000 tons 50 years ago, we now show a yearly coal output of more than 500,000,000 tons, or nearly 50 per cent. of the total coal produced by all the countries in the world. One million men are employed in or about our 6,000 American mines, while one-third that number of people gain their livelihood in the trade end of the industry, selling and handling the colliery output.

These figures indicate the magnitude of the coal business in America, and the apex of growth will not have been reached for generations to come. Allowing for a normal growth in consumption there is enough vir-

gin coal in the 27 states which furnish our fuel supply to satisfy our wants for several hundred years in the future.

Anthracite.—It is true, however, that our anthracite field in Pennsylvania has seen the day of its maximum production, if not its greatest glory. It is probable that the tonnage output of this important district will remain around the 80,000,000 mark for perhaps a dozen years to come, but every twelve-month period that passes will see anthracite stiffer in price, and always becoming more and more of a luxury for the rich. One chief reason for hopefulness in the general outlook of the coal business is the fact that anthracite requirements in the near future will not be met, and this condition will redound to the advantage of the soft-coal operators. Another point deserving notice is the rapid exhaustion of the anthracite culm piles in Pennsylvania. This depletion of the many hills of coal, once considered waste, is removing the chief competitor of the steam sizes of soft-coal and is already

strengthening the market for all grades of bituminous. The few culm banks not yet worked are on fire and therefore irrecoverable.

Consolidation of Ownership.—A further reason why the coal industry as a whole has assumed a better aspect and is on a more substantial basis is the change that has come about in the ownership of the mines. Small independent operators are not so numerous, and to-day the various collieries in each district are controlled by stronger companies. A better understanding exists among these larger interests, and, as a consequence, the suicidal competition of recent years is being overcome.

General Condition of the Industry.—For ten years the coal industry has been in the "dumps." To-day it is entering on an era of prosperity which will be permanent because it is based on unavoidable natural conditions. There may be no artificial boom, at least we hope not, but the improvement will be all the better for its moderate degree of material progress.

The principal danger is that legitimate demand may not be met in case of a hard winter, because of the method of "hand-to-mouth" underground development that has necessarily been employed. Mine operators have failed to keep their development work far enough ahead to permit them greatly to increase production if such action was demanded. Narrow work, known as entries or headings, is expensive to drive, and does not add to immediate production; the colliery owner, in most instances, has not been in strong enough position financially to look out for to-morrow, when he might be called on suddenly to double his output.

Probable Advance in Prices.—It is evident from the foregoing that the coal situation is shaping toward a condition which will advance the fuel prices throughout this country. However, there is very little danger of soft-coal prices advancing beyond the easy reach of common people, or touching a point where industry would be hampered, but it is quite likely that the next decade will witness a further advance in anthra-

cite, and a much firmer market for bituminous.

The Industry in 1912.—The year 1912 was the best period the coal and coke people experienced since 1903, when an artificial and greatly inflated market had been created by a strike which shut down all the anthracite mines for six months. Prices for all grades of fuel averaged higher in 1912 than in previous years, and the mine owners took advantage of the more prosperous conditions to improve their plants and install much-needed machinery.

There was a revision of mine laws in several states, in every case designed to further safeguard the miner. The most important occurrence of the year was the renewal of the anthracite wage agreement for a further period of three years (see XVII, *Labor*). The settlement came after the hard-coal mines had been closed down for eight weeks awaiting the outcome of the conferences between operators and men. Incidentally, the cessation permitted marketing the large accumulated tonnages at firm prices. At the same time, the owners had an excellent opportunity to repair their plants and overhaul the mines. Notwithstanding the anthracite suspension, the year's production was good.

The export shipments for 1912 showed an unprecedented increase, which is, however, hardly normal because largely due to the labor trouble which occurred in Great Britain. Some of our larger American companies secured good contracts for exporting to South America, and it is probable that a considerable part of this foreign business will continue to be handled by operators in this country. The greatest handicap to the export trade is the difficulty that attends the securing of bottoms in which to ship.

Coke production throughout the United States showed a substantial increase in tonnage as well as an improvement in prices. The betterment in the coke business was due almost entirely to the general improvement in the steel industry, the principal consumer of coke being the large steel manufacturing concerns. At the close of the year there was

little coke offered on contract for 1913, operators preferring to hold off, but \$3.00 per ton for the first half and \$2.75 for the whole year seem to represent the minimum prices which could be secured by a good buyer.

The West Virginia Strike.—After the anthracite agreement was concluded in the early summer the officials of the miners' union turned their attention to the matter of organizing the mine workers in southern West Virginia. A strike was called in September, and conditions remained unsettled all through the last months of the year. Much rioting occurred and many lives were lost. The militia was called out and martial law prevailed. Although the operators have gained ground and may win, the fight of the miners will be repeated at intervals until all mines in West Virginia are unionized. The national officers of the miners' organization have long realized that this state is a "thorn in their side," and the greatest stumbling block in their path of progress. The fights in West Virginia will be more frequent and of longer duration until the men prevail.

Improvement in Mining Methods.

—Concerning the part machinery plays in coal mining, it is sufficient to say that in 1912, 50 per cent. of the bituminous tonnage produced was mined by machines, and 30 per cent. was mined by hand. One-half of the remaining production was shot from the solid, a practice that is reprehensible in the extreme, because of the liability to accident and the deleterious effect on roof and pillars. Fortunately this latter practice is growing less each year and will soon be legislated out of existence.

Mine Accidents.—The year 1912 was exceptionally free from serious mine catastrophes, there having been fewer accidents during the past twelve months than in any of recent years. The most noteworthy explosions in coal mines were as follows:

Jan. 9.—Six men killed and two seriously injured in explosion at No. 9 slope of the Parrish Colliery at Plymouth, Pa.

March 7.—Seven men killed and two injured by explosion of gas in the mine of the Diamond Vale Collieries Co., at Merritt, B. C.

March 20.—Seventy-four men killed by explosion in Chant No. 2 mine of Sans Bois Coal Co., McCurtain, Okla.

March 28.—Eighty-one men killed by explosion in mine of Jed Coal & Coke Co., Jed, W. Va.

April 21.—Six men killed by explosion of gas in Coll coal mine, Madisonville, Ky.

July 3.—Fourteen miners were killed in explosion at Osterfield Colliery, Germany.

July 9.—Double explosion at Cadeby mine, Yorkshire, England; 88 miners killed.

July 16.—Six miners killed and three seriously injured in an explosion at the Gayton Coal mine, owned by Old Dominion Coal Development Co.

Aug. 8.—Explosion of firedamp at Lorraine shaft, Gerthe, Westphalia, Germany; 109 men killed and 23 injured.

Aug. 13.—Explosion at Abernant mine, Alabama; 17 colored miners killed.

Sept. 3.—Sixty-one persons killed by gas explosions at La Clarence, Lens, Pas-de-Calais, France.

Bureau of Mines.—There is no doubt that the Bureau of Mines has done efficient work this past year in the matter of educating mining men on questions of safety, and it is, therefore, certain that much credit is due the engineers employed in this federal mining department. In addition to their instruction work, designed to make mining safer, the efforts of the bureau have been turned largely to many scientific problems directly related to actual mining. Such subjects as flushing culm into the mine workings to prevent surface cave-ins, maximum extraction of coal pillars, coal washing, etc., have come in for quite a little consideration. (See also *Mining and Ore Dressing, supra.*)

IRON AND STEEL

BRADLEY STOUGHTON

The Developments of the Year.—The important developments in the iron and steel industry in 1912 in-

clude extension of the known ore reserves; increased amount of work in preparation of ores before their

introduction into the blast furnace, this feature being most marked in America; a betterment in industrial conditions, as evidenced by greater activity and demand for iron and steel; a betterment in the working conditions of American laborers, such as less Sunday work, less proportion of 12-hour day men, etc.; innovations in the drying of blast for blast furnaces, and, to a less extent, for Bessemer converters, which tend to lower the cost of installation and operation; fuel improvements in open-hearth furnaces, a new type of converter for making steel castings; the extension of the use of electric steel refining to one of the large American independent steel plants; three new processes for producing ingots free from pipes and blowholes; an important renewal of activity in improving the quality of steel rails, and especially a development in the inspection of rails during their process of manufacture; several valuable investigations giving us insight into the characteristics and quality of cast iron, these investigations including both theoretical and practical studies; some investigations of new interest on heat treatment and cementation; and many new data of alloy steels, especially alloys with silicon and the natural alloys smelted from Cuban ores without the addition of alloying elements, known as "Mayari cast iron" and "Mayari steel." There is a notable distinction between the year 1912 and the several years preceding it, in the absence of recorded improvements in furnaces and furnace practice, while the increased attention given in America to the quality of the output is even more marked in 1912 than it was in 1911.

Iron Ores.—While no new ore discoveries of major importance have been recorded for 1912, there have been developments which have extended the ore resources of China, Norway, France, the Philippines, Chili, the western coast of Mexico, and the Lake Superior region, especially the comparatively new Cuyuna Range. This latter range was fully described at the October meeting of the American Institute of Mining Engineers, and the iron

industry of Chili was treated in detail at the September meeting of the British Iron and Steel Institute.

As to the preparation of iron ores previous to their treatment in the blast furnace, it is now becoming better known in America that the blast-furnace operation may be so cheapened by a careful preparation of the ores before charging therein as to more than pay for the cost of this preparation, and, furthermore, that a suitable preparation renders available many ore supplies too poor in iron, or too impure in phosphorus, sulphur or other harmful ingredients, to be otherwise used for smelting. America can perhaps claim to be a pioneer in establishing the fact that blast-furnace smelting may be greatly increased in efficiency by close sizing and conditioning of all the raw materials charged in it; that is to say, if the lumps of ore, coke and limestone are similar in size, then the different reactions will be confined to narrow zones of the furnace stack, and the work will be both more rapid and more economical, but, if some lumps of ore are large and some fine, or if the lumps of limestone or coke vary widely in size or quality, then part of the ore will be reduced at one point and part at another point, so that the zones of reaction will be extended in the furnace and the work will be irregular and uneven, tending to decrease the output and increase fuel consumption. Americans have therefore insisted for some years back on crushing and sizing of lump ores. Now comes a further step in the agglomerating of fine particles. While not new in principle, this operation has been much improved in practice, and we now have available: briquetting processes, of which the most important in America is that devised by Dr. Schumacher of Germany, and sintering processes, of which the Davis-Colby, the Gröndal and the Dwight-Lloyd are the most prominent. There have been many installations of the Dwight-Lloyd process, especially in America in 1912. An agglomeration of fine particles makes it possible to purify ores to almost any desired degree by crushing and mechanical concentration, and then to get rid of the un-

desirable, pulverized condition which results. It also enables us efficiently to use the fine dust which is too often wasted because of the finely powdered condition in which it is recovered. Besides this physical improvement of ores for smelting, the amount of chemical improvement by washing or other form of concentration has been greatly increased.

Blast Furnace Construction and Operation.—J. E. Johnson, Jr., has built a blast furnace of which the upper part rests upon I-beams supported on columns that stand some distance away from the furnace shell, thus giving more space without hindrance to the work of the men. A two-stage, direct-contact method of drying air for blast has been proposed in order to cheapen the cost of installation and operation. The number of thin-lined furnaces has increased, but it has been learned that this type is not advisable under all circumstances; it has also developed that 12 in. is about the best thickness of lining, and that less than 9 in. thickness is more harmful than advantageous. New uses are being developed for blast-furnace gas and for slag, and J. J. Porter proposes a new method of basing cost records, on standards of efficiency rather than on actual cost, because the latter may vary from district to district and from time to time, due to variations in cost of materials, transportation, labor, etc.

Open-Hearth Furnace Charges.—A process has been proposed for making spongy iron briquettes by reduction of ore with carbonaceous gas, and then melting these briquettes in the open-hearth furnace to produce steel. The purpose is to do away with the blast-furnace operation. Improvements have been made in the manufacture of open-hearth steel very low in carbon. Coke-oven gas continues to be used more abundantly in open-hearth furnaces, with less troubles than previously, and now a new fuel is being tried by important interests, namely, the tar residues of the by-product ovens. It will be remembered that this was suggested several years ago, but was tried only for a short time. The tar is supplied to the burners under high

pressure, and is atomized with steam or compressed air. W. M. Carr has built some small open-hearth furnaces for making steel castings; the hearth and body of the furnaces are inclosed in steel and can be picked up by the crane and used as a casting ladle, so that the steel is not cooled by tapping first into a ladle and then into molds. Mechanical draft from a large 25 h. p. exhaust fan was recently used on a 20-ton open-hearth furnace to take care of the waste gases during the temporary lack of a chimney caused by an accident.

New Steel Foundry Bessemer Converter.—A number of installations have been made of the "Stock" converter, which is so arranged that pig iron may be charged into it and then melted by means of oil blowpipes inserted through the tuyères. After the iron is melted, the converter is turned into the upright position, the blast is turned on and the metal converted into steel. The purpose is to save the use of the cupola for melting. The high cost of installation, heavy oxidation of iron during melting and large amount of oil burned, alone militate against further extensions of the process.

Electric Furnace Changes.—There has been no retrograde, and no special forward, movement in electric-furnace operations. The ore reduction furnace in California continues to make a good grade of pig iron, although the cost is said to be high. The refining furnaces in use last year continue at about the same rate, although the operations of the two principal furnaces used for super-refining Bessemer and open-hearth steel respectively have not been producing on a scale to indicate great commercial success. The event of chief importance is the adoption of the Girod furnace for super-refining open-hearth steel at the plant of the Bethlehem Steel Co. This furnace will probably not be in active operation before 1913.

Avoiding Defects in Ingots and Castings.—In the *Journal of the Iron & Steel Institute*, Austin and Andrews discuss the gases escaping from iron and steel; Stead discusses in detail the welding up of blow-

holes and cavities, and Hadfield, Goldschmidt and Talbot discuss the producing of sound ingots. Sir Robert A. Hadfield describes more fully than before his new process of studying the conditions of solidification of ingots by pouring melted copper into the top of the ingot at different periods in its solidification, then cutting open the ingot and noting to what point the copper has penetrated, thus indicating what part of the ingot was molten at the time of pouring in the copper. He also describes his process of raising the pipe and decreasing its volume by a charcoal fire on top of the ingot. Benjamin Talbot describes his process of eliminating the pipe, welding up blowholes and improving the structure of ingots by passing them through the rolls while the interior is still liquid. This is apparently an improved method of the so-called "liquid compression of steel" process in use at many plants for improving the quality of steel.

Improving the Quality of Railroad Rails.—During 1911 the question of improving the quality of rails was earnestly studied by manufacturers with some gratifying success. These efforts were followed by a decision made at a recent conference of manufacturers with certain railroad officials, to increase greatly the scope of the inspection of manufacture allowed to the purchaser so that every operation in the course of making the rails would be inspected and recorded with such detail that every individual rail would have a history which could be referred to at any future time when it was desired to compare the facts of its manufacture with its record in service. This requires the employment of a large force of men on duty at steel works and rail mills both day and night, whose purpose it is to observe and record every event in the making of the rails. These men are employed at the expense of the purchaser, but their records are available to both maker and purchaser, so that the result will not only insure good quality to the purchaser, but also give the maker a large amount of data upon which to base further safeguards and improve processes.

Innovations in Welding of Pipe.—In the making of pipe, a long, flat sheet, known as "skelp," is usually curled up and welded along the edge to form a tube. This is accomplished by heating the whole piece of skelp to a welding heat and then passing it through a bell and pair of rolls which work the metal at the line of weld, but not elsewhere. The consequence is that the coarse crystallization produced by the welding heat is not broken up except at the welding line. Two changes have been tried or suggested: The first is to weld the skelp by heating it by means of the oxy-acetylene flame only along the line of weld; the second proposes to heat along the welding line by means of the "surface-combustion," or "flameless-combustion" process. These methods would not only avoid producing coarse crystallization, with its consequent weakness, in parts of the pipe away from the weld, but, it is claimed, would save fuel as well.

Copper in Tubes and Rails.—Copper has been tried up to 1.50 per cent. in tubes in order to take advantage of the lesser corrosion said to be suffered by steel containing this metal. Trouble has been experienced in welding copper-steel and the practice has not become general. A good deal of steel has been made for various purposes with 0.25 to 0.30 per cent. of copper, and many tons of railroad rails with about 0.50 per cent.

New Data on Rolling.—Time, fuel, and labor are large factors in the cost of making drop forgings. By having a die cut on top and bottom rolls, many shapes can be rolled which would otherwise have to be drop-forged. The work can be produced much faster and at a correspondingly lower price. In *Stahl und Eisen* is given the record of a study of the theory of rolling and forging as to the flow of molecules or particles.

Ingot Molds for Small Sizes.—By using a pair of grooved plates which can be held tightly clamped together, a series of molds for small ingots can be made, with a decrease in the cost of casting, machining, etc., of the ingots.

Iron-Carbon Equilibrium Diagram.—Ruff, Howe, and Wittorff have greatly increased our knowledge of the relations of iron and carbon at temperatures above 1,100 deg. C., and especially at temperatures above 2,000 deg. C. These researches will have an important bearing upon the quality of iron castings (see *Bul. Am. Inst. Min. Engs.*, Oct., 1912). Wittorff has shown that the structure of alloys containing more than 4 per cent. of carbon is much more complex than had been supposed, and his investigations tend to show that primary graphite is a normal constituent of these alloys only in limited degree. The constituents separating from the melted alloys comprise various carbides of iron and austenite. Wittorff for the first time explains the observation of Moissan that iron rich in carbon becomes solid when heated close to 2,000 deg., and then melts again as the temperature is reduced.

Quality of Charcoal Iron.—J. E. Johnson, Jr., uses the iron-carbon diagram as the basis of the first rational explanation of what is called "spotted iron"; that is, iron with a gray exterior and white spot inside, which has oftentimes been a source of serious annoyance to manufacturers of malleable cast iron and others. It has long been known that this condition was dependent to a large extent upon the casting-temperature of the iron; Johnson shows that it is caused by the liquation of the iron-carbon eutectic, and that it is more liable to occur in hyper than in hypo-eutectic irons, and furthermore that it is dependent upon the temperature at which the iron is reduced in the blast furnace. His investigation also covers certain conditions of blast-furnace work which cause good and bad quality iron.

Chilling Cast Iron.—Thos. D. West has developed a new process for chilling cast iron by means of compressed air instead of using metal "chills" placed in the molds.

Important Experimental Investigations.—Rugan and Messerschmitt have studied the volume changes in cast iron; Becker has made a study of the system Fe-Fe₃C; Packer discusses in detail the content of slag in steel; Hadfield describes a new method of raising the strength of steel by heat treatment; a large railroad in America is experimenting on improving the quality of steel castings by heat treatment, with gratifying results; Sauveur and Reinhardt have developed a process for case-hardening alloy steels by cementation until the carbon content brings the alloy into the range where they are normally martensitic; Abbott and Ammon and Daebritz have studied the case-hardening of steel; Hilbert and Mathesius state that quenching increases the magnetism of manganese- and nickel-steels.

Mayari Cast Iron and Mayari Steel.—The Mayari iron ores of Cuba, which are smelted in the eastern part of America, contain small percentages of nickel and chromium, most of which is reduced in the blast furnace and passes into the pig iron. These ores may be mixed with those from other localities so as to produce a pig iron containing small quantities of nickel and chromium, and this iron makes castings superior to ordinary castings in strength, toughness and wearing qualities. If the pig iron is purified in the open-hearth furnace, the nickel and some chromium can be made to pass into the steel, which has proven superior to ordinary steel and is used for many purposes requiring extraordinary strength.

Silicon Steel.—The classic investigations published by Hadfield some years ago seemed to leave very little, if anything, to be learned about the alloys of iron with silicon, but results published by Paglianti this year indicate that steel of about 5 per cent. silicon has strength and electrical properties of a good deal of interest.

COPPER

L. S. AUSTIN

Neutralization of Acid Furnace Fumes at Ashio, Japan.—The fumes produced in the roasting of sulphide

ores contain both sulphur dioxide (SO₂) and sulphur trioxide (SO₃). The latter gas, naturally so corro-

sive, is neutralized by aid of lime-water as follows: The fumes after passing through a dust-chamber are conducted through a flue 12 ft. by 12 ft. in section, sloping up the side of the mountain and broken at four places by vertical steps 40 ft. high. At the top of each step is a plate having 200 holes of 1 cm. diameter and through these holes rains down the solution of limewater. It requires 40 cu. ft. of water per min. and 300 lb. of burned lime per hour to neutralize the gases so that they contain no more than 0.5 per cent. of SO_2 .

The Nakamura Roasting Pot.—At the Shisaka Smelting Works, Japan, a combined method of nodulizing and sintering fine ore has been devised. Into a conical wooden cylinder 8 ft. long and with top and bottom diameters of 3 ft. and 5 ft., respectively, is fed a mixture consisting of fine ore ($2\frac{1}{2}$ per cent. Cu and 30 per cent. S) 100 parts, flue dust 20 parts, silicious flux 40 to 50 parts, and water 6 to 7 per cent. The mixture agglomerates, as the conical cylinder revolves on its horizontal axis, into balls one-half to three-quarters inch in diameter. For sintering, the nodules pass to steel roasting pots, consisting essentially of circular grates with shallow sides, set over fire-brick lined pits into which enters a blast from a Root blower. Each pot is surmounted by a heavy sheet-iron hood luted at the bottom edge in sand. At the top of the hood is a charging bell. Below the bell are baffle plates to distribute the charge. At the side of the hood are outlets for the escape of the gases.

In operating the roasting pot, the first material placed on the grate is burning pyrite spread to a depth of 1.5 in. Over this is placed a layer of hot dust from the pot last dumped then three tons of the agglomerated ore. The pot is then covered and the blast at 1.5 oz. pressure turned on. At intervals during the next four hours three additional charges of three tons each are fed in, a total of 12.5 tons in four hours. On completion of the roast the cover is removed, the pot raised and dumped, the contents falling on an iron cone,

which aids in breaking the sintered mass in convenient pieces for handling. The rapidity of the work compared with the older method of pot-roasting, in which a smaller charge took 12 or more hours to roast, is due to the previous agglomeration of the ore.

Regenerative Reverberatory Furnaces.—At Kyshtim in the Urals there has been introduced a Siemens-Martin regenerative furnace 35 ft. long for the treatment of fine ore and flue dust from the blast-furnaces. A regenerative furnace of 42 by 15 ft. hearth dimensions has been tried at Great Falls, Mont., but failed to give satisfaction because of the accumulation of dust in the checker work, which eventually choked them. However, with so long a furnace and with caution in dropping the charge and in dumping the furnace when charging, this trouble may be largely overcome.

The Use of Pulverized Coal.—The new reverberatory furnaces of 112 ft. by 19 ft. hearth area at Copper Cliff, Ont., have been equipped to burn pulverized coal. The coal is broken to one-half inch size, then ground to 200-mesh in Raymond impact-pulverizers. The powder is sucked by fans to a settling chamber, whence it is fed by screw conveyor to bins at the end of each furnace. From each bin it is fed by five screw conveyors into a corresponding number of burners, where it drops in front of nozzles. The air issuing from the nozzles blows the coal into the furnace in the form of a cloud which burns much in the same way as a spray of oil fuel. Each of the five burners can be worked independently, and the amount of coal and air may be varied at will.

Production of Acid Slags.—Because of the commercial necessity of dispensing with costly fluxes, the plant of the Compagnie du Boleo in Lower California is successfully producing a slag of the following composition: silica 52 per cent.; alumina 18 per cent.; ferrous oxide 6 to 8 per cent.; manganese dioxide 4 to 6 per cent., and lime 10 to 12 per cent., resembling the slags produced at Mansfield, Germany. That a slag of this

acidity and low content in iron is sufficiently fluid is due to the amount of manganese oxide present, 4 to 6 per cent. of the ore. The ore contains its copper as chalcocite and covellite and has an average copper content of 4.5 per cent.; the matte produced runs as high as 60 to 65 per cent. Cu. The furnaces, 150 in. by 42 in. at the tuyère level, have inside crucibles because of difficulty of separating matte from so acid a slag in an outside forehearth. Actually, not less than 0.5 per cent. copper remains in the slag. The furnaces (ten in number) are run rather slowly, at the rate of 250 tons daily. They are operated with a cool top, due in part to the slow running, but chiefly to the large amount of moisture, 20 to 30 per cent. The coke used amounts to about 12 per cent. of the charge.

Basic Converters at Copper Cliff.—At the smelting works of the Canadian Copper Co., Copper Cliff, Ont., are five basic converters, which replace ten acid-lined ones. These basic converters are of the horizontal type, 37 ft. long and 10 ft. diameter of shell, and there are four tread rings, 12 ft. in diameter. The stack or throat is in the middle of the length. There are 44 tuyères 1.5 in. in diameter set 7 in. center to center, but opposite the throat there are none. The length inside the magnesite lining is 33.25 ft. The lining at the bottom is 24 in. thick, at the back or tuyère wall 18 in., at the front 15 in., and at the top 12 in. The converter has two openings or spouts in the front wall opposite to but above the tuyère line. It is operated by wire ropes, as in the Smith-Pearce converter.

The blast-furnace mattes treated vary from 20 to 40 per cent. in copper-nickel, the lower grade having 2.4 lb. of iron per pound of copper-nickel, the higher but 0.88 lb. of iron per pound of the metal. Hence the importance of basic converting when the matte drops to the lower figure in copper-nickel. The initial charge of the converter is about 600 tons of furnace matte, to which is added 10 per cent. of dried quartz rock. Blast is turned on for half to three quarters of an hour;

the converter is then tilted to pour off the slag. While the slag is being poured, 5 to 6 tons of molten matte is introduced, and upon removal of the slag, 3 tons of quartz ore. Another blow is then commenced and the cycle of blowing and addition of matte and silicious fluxing ore continued until 70 to 80 tons of blister copper has accumulated. This generally means the admission of 300 to 400 tons of furnace matte, and a period of 30 to 50 hr. blowing-time, depending on the grade of the matte.

A Giant Upright Converter.—At the Great Falls plant of the Anaconda Copper Mining Co. is in operation a converter 20 ft. in diameter of shell and 17 ft. high. The basic lining is of magnesite brick, 2.5 ft. thick on the tuyère side and 2 ft. thick on the opposite side. There are 62 tuyères 1.75 in. in diameter, and 25,000 cu. ft. or nearly 1,700 lb. of air is used per minute. The total weight of the converter filled with metal is nearly 300 tons. The weight of the initial charge is 65 tons, and 52.3 tons of copper has been produced from a single blow. In the first run 135 tons were produced in 24 hr. actual blowing time, or 100 tons per 24 hr. lapsed time. In operation a suitable slag lining is first obtained, after which the essential feature is to get proper temperature-control. This is the more easily obtained the larger the mass of molten material treated, and is effected by the free addition of cold material by which the heat is kept down within proper limits. Due to the deep column of matte above the tuyères and to the consequent high blast-pressure (12 lb. per sq. in.), oxidation proceeds with great rapidity. The circular section insures effective support of the lining.

One of these converters has made over 7,000 tons of blister copper on one lining, while an earlier type of converter of the same size, but with only 15 tuyères, has been in continuous operation since March 9, 1910, and has made over 12,000 tons of copper from matte of 28.9 per cent. Cu, including cold silicious ore and by-products added. This con-

verter has treated 60,000 tons of material with one lining.

The Mason Valley Smelter.—This plant, recently erected and now in operation, shows various novelties adapted to ores not heretofore so successfully treated. The site was chosen so that the prevailing winds would carry the smoke away to the Carson Sink adjoining and not to the agricultural lands. There are two blast-furnaces, each 300 in. by 42 in. sectional area at the tuyères. The charge is carried with a 12-ft. smelting column, and the blast is blown at a pressure of 42 oz. per sq. in., and with a volume of 30,000 cu.

ft. per minute. The first furnace, in use during May, smelted 800 tons of charge per day, using 8 to 10 per cent. of fuel, a high rate when we consider the large quantity of bulky coke that has to be burned. The furnace is charged at the sides, the charge-cars being drawn slowly along while discharging in order to distribute the materials evenly from end to end of the furnace. The feed plates are adjustable so that the coke falls on the charge in the position that will give the most rapid smelting rate. The charge contains about 4 per cent. copper and 6 per cent. sulphur.

GOLD AND SILVER

LOUIS D. HUNTOON

Prospecting and Developing.—There have been no new gold-silver camps developed during 1912. Favorable reports are received from the year's prospecting in Nevada, California, Alaska and Ontario, and it is likely that new mines will be developed from this work. A few new mines have been placed on a producing basis in the Tonopah district. At Juneau, Alaska, a large consolidation of properties has been consummated which includes the Perseverance mine; the ores from this group are expected to mill about \$1.50 per ton, which will make it one of the lowest if not the lowest-grade gold mine of the lode type operated in the world. Reports from Ontario indicate that two new gold mines will be producing in Porcupine next year and that the western portion, in the vicinity of Sturgeon Lake and Kenora, offers prospects for gold mines. The mineralized area of the Cobalt district has been found to be much greater in extent than was at first supposed and new mines have been developed during the year.

Cobalt, Ontario.—The first shipments of ore from the Cobalt district, valued at \$136,000, were made in 1904. From 1904 to 1908, inclusive, several producing mines were developed each year and the output for 1908 increased to \$9,133,000. Since 1908 only one regular producer has been developed, while the output

from 31 mines in 1911 increased to \$16,500,000. This increased output is due largely to improved methods of treating the ore, thereby decreasing the cost per ton of ore and permitting the treatment of low-grade ores. The mills which were erected previous to 1910 operate along the following general lines: Most of the ores are separated by preliminary hard picking into high grade ore, mill ore and waste rock. The mill ore is passed through breakers and is then crushed by rolls or stamps and concentrated. The tailings are either discarded or pulverized through pebble mills and cyanided. The high-grade ore was shipped and the concentrates were either shipped or amalgamated in pans. The latest flow-sheet in the district, developed from a few years' experience and exhaustive tests, is as follows: The ore from the mine is hand picked, passed through jaw-breakers, again hand picked, and the mill ore crushed in cyanide solution, through 40 mesh, with 1,500 lb. stamps. In place of concentrating at this point the product is passed through tube mills for sliming. This product will be amalgamated if necessary and the residual slime will be agitated in cyanide solution and filtered. For the treatment of high-grade silver ores such as the concentrates and mass silver, a combined amalgamation and cyanide process has been

developed, which has been most successful in reducing freight charges, the cost of refining, and losses in slag. The process consists of pulverizing the concentrates and rich ore which has been picked out by hand in a No. 3, 6 ft. Krupp ball mill fitted with 20-mesh screens. The metallics or nugget silver which will not pass the screen are removed and melted down in the refinery. The undersize containing native silver is amalgamated in a Krupp mill 3 ft. 11 in. in diameter and 19 ft. 8 in. long, containing a 5 per cent. cyanide solution. The charge with ore containing 2,500 oz. is 6,500 lb. of ore, 8,500 lb. of mercury, 3,800 lb. of cyanide solution, and 6 tons of pebbles. The tube mill is then revolved for a sufficient time to amalgamate the silver, after which it is discharged. The amalgam, containing about 97 per cent. of the silver charged, is treated in the usual way. The tailings or residue from this charge are again cyanided, giving an extraction of approximately 100 per cent.

The net saving in costs made by the introduction of this process is about 50 per cent. The importance of this new metallurgical treatment is well illustrated in the following figures taken from the annual report on the La Rose mine for 1911:

	Tons.	Oz.	Ag.	Assay oz.
Nuggets	12.5	274,598		21,968
Rich ore.....	1,771.0	3,066,489		1,731
Medium ore..	603.0	112,067		186
Concentrate..	1,175.0	639,554		544

3,561.5 4,092,709

The cost of freight, sampling and treatment was \$181,815.

Porcupine, Ontario.—The mills of Porcupine, Ont., have been operating less than 12 months and metallurgical changes are to be expected. There are three radically different flow-sheets in use. Reports indicate that the Dome mill is successful in making high recoveries with the following flow-sheets: Rock-breakers, heavy stamps, apron-plates, tube-mills, tube-mill plates, agitation of slime in cyanide solution, Merrill's slime filters, and the precipitation of the gold with zinc-dust. The original flow-sheet of the Hollinger consisting of stamping in cyanide

solution followed by tube-milling, amalgamating pans, concentrating tables, and cyaniding of the tailings has been reported in the technical press as not giving the results expected and changes will be made. The general manager states in his report dated Nov. 2, 1912, that no attempt was made to treat ore until July 1, and that the only change contemplated in the cyanide plant is the substitution of Dorr thickeners in place of Trent agitators. He states further that experiments are being conducted with a view to improving the present method of treating the concentrates. At the present time 300 tons of \$30 ore are being treated daily by a 40-stamp mill with an extraction of 97 per cent. The reports of the crushing operation from the Porcupine Gold Mine Co., where stamps have been replaced by rolls, are most favorable. The method of milling here consists of: breaker, rolls, Hardinge pebble-mill, classifier, oversize returned, undersize to second Hardinge pebble-mill, and the slimes to plates. The tailings are impounded for cyanide treatment if warranted. The product from the second pebble-mill contains 95 per cent. under 100-mesh. The recovery is reported to be 85 per cent. The advantage of this type of mill is very low initial cost and low operating costs. Flow-sheets similar to this last have been advocated on the Rand and were advocated by the writer three years ago.

Preliminary Crushing.—The Metallurgical Engineers of South Africa are again agitating the advisability of replacing the stamps with rolls. A few of the smaller mills in this country are following the practice, although no large mills have been built along these lines. The reports from these plants indicate that the costs of installation and operating are less than with stamps.

South Africa still leads the world in the use of heavy stamps. The Benoni mine has recently installed 55 stamps weighing 2,200 lb. The capacity of these stamps is reported to be 14 tons through 8 mesh and 22 tons through 3 mesh. In America the weights are being increased gradually. The heaviest stamps appear

to be 1,500 lb. The West End mill of Nevada has recently installed 10 stamps weighing 1,200 lb. and 10 stamps weighing 1,300 lb. In Porcupine, Ont., the stamps of the Dome mill weigh 1,500 lb.

Amalgamation.—The old practice of installing apron-plates, following the stamp battery, is gradually becoming obsolete and only used in small mills and in a very few of the larger mills. In South Africa, where more attention has been given to stamp milling than in any other part of the world, stamps are used only for crushing. Apron-plates have been entirely replaced by stationary or shaking amalgamating plates following the tube-mill and are now placed in a separate building. At first a large area of shaking plates was considered necessary, but after careful investigation it has been proved that a small area of stationary plates placed at the proper angle and fed with pulp of the proper consistency recovers practically all of the amalgamable gold. The recovery of Rand ores is reported to be 55 per cent.

The report of experiments conducted on the Rand recently to determine the amount of gold absorbed by copper plates, in plate amalgamation, tends to prove that the gold does not penetrate into the interior of the plate and that practically all of it can be recovered by proper scaling. Following are the results from experiments conducted on 328 sq. ft. of plates which had been in use for 12 years: recovery by steaming, 318 oz.; first scaling, 73 oz.; second scaling, $2\frac{1}{4}$ oz., and assay of plates after second scaling, 1.16 oz. A microscopic examination indicated that the absorption was due to amalgam penetrating microscopic crevices and blowholes in the structure of the plates.

Pulverizing.—In the past the stamp mill has held an impregnable position for pulverizing gold ores preparatory to amalgamation. With the introduction of tube mills and with increased weight of the stamps they have become only a crushing machine. It appears to the writer that with the perfection of high-speed rolls it is only a question of a very few

years when the stamp mill will be replaced by stage crushing, consisting of rolls and possibly Chilean mills, following by tube mills. The great advantage to be derived by stage crushing is lower costs of installation and operating, and a reduction in the percentage of water in the pulp.

The first tube mill on the Rand was introduced in May, 1904. Since that date tube mills have been installed in most of the large gold-silver mills of the world. Within the last two years Chilean mills have been introduced in this country between the stamps and tube mills, resulting in a reduction in the costs per ton-capacity of installation and per ton-operating. The number of stamps per tube mill varies greatly. The recently erected Benoni mill on the Rand contains 55 stamps weighing 2,200 lb. and four tube mills, or a ratio of 14 stamps per tube mill. We also find in the same district 20, 19, 16.7 and 10 stamps per tube mill. The new West End mill at Tonopah, Nev., contains 10 stamps per tube mill.

Concentrates.—To reduce freight charges, cost of smelting and slag losses, various gold-silver properties have developed processes for the treatment of concentrates on the property. At the mill of the Gold-fields Consolidated in Nevada the concentrates are given a preliminary acid treatment before amalgamation and cyaniding. At the Alaska-Treadwell mill, where the concentrates are pulverized in a tube mill, followed by agitation in cyanide solution, a recovery of 96.5 per cent. is being obtained from an original assay of \$60.43. The cost of this treatment for 1911 was \$2.82 per ton, or a net saving of about \$3.00 per ton. At the Perseverance mine at Juneau, Alaska, the amount of concentrates produced did not warrant the erection of a cyanide plant, and the concentrates are amalgamated in pans and reconcentrated, resulting in a net saving on freight and treatment charges. At the Hollinger mine, Porcupine, Ont., investigations are being made which will probably result in the treatment of concentrates on the property.

Canvas Tables.—For several years following the perfection of the cyanide process and bumping tables, canvas tables following the stamp mill were abandoned. Recently they were again introduced in the treatment of slimes produced from the crushing of sulphide ores. During the year the attention of the engineering profession has been called to the introduction of a stationary canvas table in use at the old Combination mill at Goldfield, Nev. The cost of operating these stationary tables is given at 30 cents per ton of pulp treated. With improvements in the design of canvas tables they will probably enter to a large extent into the concentration of sulphide ores and it is barely possible that they will again be used in the milling of gold ores.

LEAD

H. O. HOFMAN

Results of Research.—New light has been thrown upon the separation of PbS and Sb₂S₃ by the work of Wagemann (*Metallurgie*, 1911, IX, 518-23). He found that the two sulphides form a compound corresponding to the formula Pb₂Sb₂S₃ and three series of solid solutions. Of the latter the most important is the solution of Sb₂S₃ in PbS saturated at 4.1 per cent. Sb₂S₃. The Sb₂S₃ cannot be successfully leached below this percentage, unless sufficient Sb₂S₃ had been first fused with the ore to produce a composition corresponding to the formula Pb₂Sb₂S₃. If this is done, the Sb may be quantitatively removed with Na₂S solution.

Heike (*Metallurgie*, 1911, IX, 313) has made a study of the system PbS-SnS and found that the sulphides formed two series of solid solutions; there was no evidence of a chemical compound.

N. Baar (*Zeitschrift für anorganische Chemie*, 1911, LXXVI, 352) has investigated Pb-Ca alloys, and has established the existence of three definite compounds, Pb₂Ca which melts at 650 deg. C., PbCa which melts at 960 deg. C., and PbCa₂ which melts at 1,100 deg. C. There are two eutectics in the system, one at about 91 per cent. lead and the other at about 38 per cent. lead.

Production.—The world's production of lead in 1911, as reported in *The Mineral Industry*, was 984,646 metric tons, of which the United States produced 363,829 metric tons, or nearly twice as much as Spain, its nearest competitor.

Blast Roasting.—The principles of

blast roasting were explained in the last issue of the YEAR BOOK (p. 519) and will not be repeated here. The continuous methods, notably the Dwight-Lloyd apparatus, are being generally adopted at the expense of the intermittent pot roasters. Arthur S. Dwight, in a paper read before the Eighth International Congress of Applied Chemistry, points out that a more uniform product can be obtained with the continuous machines as regards both sulphur elimination and physical condition than with the intermittent. He states that furnaces smelting Dwight-Lloyd sinter have increased their capacities from 20 to 60 per cent. with diminished flue dust loss and almost total absence of furnace troubles. In Germany the apparatus is being used with some modification in connection with sulphuric-acid manufacture.

Some interesting figures are given in *Metallurgical and Chemical Engineering* (1912, X, 87) regarding the Dwight-Lloyd machines at Salda, Col. There are in use three large machines, each having a capacity of 75 tons per 24 hours, with the grates moving at a speed of 1.6 ft. per minute. Coarse ore ($\frac{1}{2}$ -1 in.) is first fed on the grates to a depth of 1 in., and this followed by 3 in. of fine ore. The charge is ignited by a suspended coal-fired stove which burns 1 ton of coal to 185 tons of charge. The fans produce a vacuum equivalent to 8 in. of water. The charge consists of a mixture of partly-roasted iron sulphide concentrate, silicious sulphide ore, raw lead concentrate and fine sinter. The average analysis is Pb 18.0 per cent.,

Cu 1.0 per cent., insoluble 24.6 per cent., Fe 21.2 per cent., Mn 1.0 per cent., Zn 7.6 per cent., S 15.4 per cent.

C. A. Bannister has investigated the reactions taking place in blast roasting (*Transactions of the Institution of Mining and Metallurgy*, 1912) and draws the following conclusions: The PbS is partly oxidized to sulphate and partly to oxide, and these products subsequently react with each other and with the remaining PbS. When lime or magnesia is present, the CaO and MgO tend to form sulphates leaving proportionally more Pb to form oxide. When the temperature is below 1,000 deg., SiO₂ and CaSO₄ take no part in the reactions, but above 1,000 deg. SiO₂ decomposes sulphates. Ferric oxide apparently acts under certain conditions in blast roasting as a catalyzing agent.

Blast-Furnace Practice.—Among the many valuable papers read before the Eighth International Congress of Applied Chemistry was one by R. C. Candy on "The Development of the American Water-Jacket Lead Blast Furnace." The gradual changes in blast-furnace practice are traced, beginning with the small furnace at Eureka, Nev., in 1870. At present the largest furnace in operation has a cross section at the tuyères of 42 by 120 in. Smelting costs have been reduced below \$2.25 per ton. The best operating record obtainable is 5½ tons per sq. ft. of hearth area per 24 hours; the fuel consumption has been reduced as low as 9 and 11 per cent. fixed carbon.

Preparing Furnace Charges.—Several important points on this subject are brought out by A. Eilers (*Engineering and Mining Journal*, Vol. XCIV, 1912, 147). Even large furnaces require that the charges be uniform, otherwise poor slags will result. Sintering machines, to which various ores to be smelted are simultaneously fed, produce the desired result mechanically. When the ores are not to be sintered and there are sufficient quantities of each lot, the charge may be prepared by weighing directly from the separate stock bins. In many custom smelters where the ore is received in small lots the well

known bedding methods are still practiced.

Another important consideration in blast-furnace work is the use of just the proper amount of coke. Any surplus of coke may be as injurious as an improper mixing of the charge.

Bag Houses.—The subject of bag houses is carefully discussed by A. Eilers in a paper read before the Eighth International Congress of Applied Chemistry. He gives figures regarding the plants of the American Smelting and Refining Co. at Murray, Utah, and Omaha, Neb., which are of interest. At the Murray plant cotton bags were first used. These bags, which were 30 ft. in length and 18 in. in diameter, cost \$2.136 each, and had an average life of 17 months and 11 days. They have been replaced by woolen bags of the same dimensions which do equally satisfactory work and have a longer life. The cost of the woolen bags is \$4.718; this is slightly more than twice the cost of cotton, but they last for four years. The filtering surface provided is 3.45 sq. ft. per cu. ft. gas per minute.

By making a fair charge for interest and depreciation, the Murray plant shows an apparent loss in operation, but the filtration of the fume prevents damage to the surrounding farming country, and it is impossible to estimate the saving due to freedom from law suits.

At the Omaha plant, the converter, blast-furnace and zinc-oxide departments, each has its own bag house system, and the operation of each shows a profit.

Parkes Process.—Under the title "Development of the Parkes Process in the United States," Ernst F. Eurich (*Proceedings of the Eighth International Congress of Applied Chemistry*) has discussed the growth of desilverization of argentiferous lead by means of zinc. The method in general use to-day is a modification of the original Parkes process. The softening is done in a reverberatory furnace. The desilverizing kettles are of cast iron and have a capacity of 60-70 tons. The Howard stirrer is in general use for incorporating the zinc. For emptying the kettles the syphons formerly used

are being replaced by centrifugal pumps. After skimming, the crusts are pressed to free them as far as possible from adhering lead. The zinc in the crusts is distilled in graphite retorts which are usually fired with oil; they have a capacity of 1,200-1,400 pounds. The bullion remaining from the distillation of the zinc is cupelled for silver. The lead remaining in the kettles after skimming, containing about 0.6 per cent. zinc, is refined in reverberatory furnaces.

ZINC

W. R. INGALLS

Commercial Conditions.—The conditions favorable to the producers of zinc ore and of spelter, both in Europe and America, which became good before the end of 1911, continued good through 1912, during which year a higher price for spelter prevailed than for many years previously. In London the price rose to £27 10s., and in New York to 7½ cents per lb. The reason for this upward movement was the great demand inspired by the growing industrial activity and the difficulty experienced by producers in keeping pace with it. In America the situation became acute, owing to the diminished supply of natural gas used as fuel by the smelters in Kansas and Oklahoma, and the failure of the smelters to build new works with sufficient rapidity in the coal fields. During most of 1912 the smelters of the United States shipped their product hot from the furnaces. About the end of the summer, market conditions permitted the importation of several thousand tons of spelter from Europe, in spite of the duty of 1½ cents per lb.; during decades previously there had not been any such importation.

Ore Supply.—No important new sources developed during 1912. The European smelters were supplied about as usual by the several mining districts of Europe, where there is but little change from year to year; and also continued to draw heavily from Australia, where the shippers of ore enjoyed great prosperity, being favored with high prices for spelter and lead at the same time. A little zinc ore came from Japan, but it is doubtful if that country will become an important source of ore supply, inasmuch as the Japanese themselves probably will try smelting at home;

indeed this is being done already on a small scale.

In America, the increased ore supply expected from Butte, Mont., did not materialize, owing to difficulties about the construction of a new milling plant there. However, these will soon be corrected, and in the course of a few years Butte will doubtless become the second largest zinc-producing district of the United States.

Metallurgy.—The European smelters give great attention to the details of their practice and steadily make improvements in the fuel economy of their roasting and distillation furnaces; also in the durability of their construction. Conditions in the United States do not yet induce a similar attention. With coal costing only about \$1 a ton it does not pay to introduce ultra-refined and costly furnace construction. With coal at \$3 to \$4 a ton conditions are manifestly different. These remarks refer especially to the distillation furnaces. In the matter of roasting furnaces American metallurgists have been more advanced. Some experiments were carried on in the United States during 1912 that may have important results in this branch of the art. In general, zinc-smelting practice in the United States in 1912 was characterized by no new features, except that a retort-charging apparatus, imported from Europe, was introduced in some works.

Electric Smelting.—A great deal of experimentation has been going on in this field. As previously reported, much difficulty has been experienced in condensing the zinc vapor from the electric furnace as spelter, rather than as blue powder. Specketer, Chierry and Johnson, according to accounts that come to me, have now

XX. THE MINERAL INDUSTRIES

CENSUS OF MINES AND QUARRIES, 1909

INDUSTRY	Number of Operators	Number of Mines, Quarries, and Wells	Expenses of Operation and Development	Value of Products	Per Cent. of Increase 1902-9	Number of Persons Engaged
All Industries (Continental U. S.)	19,933	.....	\$1,042,642,693	\$1,238,410,322	52.4	1,139,332
FUELS:						
Coal, anthracite	192	423	139,324,467	149,180,471	95.8	178,004
Coal, bituminous	3,503	6,013	395,907,026	427,962,464	38.2	592,677
Petroleum and natural gas	7,793	166,320	135,638,644	185,416,684	72.0	62,172
Peat	10	10	96,034	109,047	.....	203
METALS:						
Iron	176	483	74,071,830	106,947,082	63.4	55,176
Copper	160	368	107,679,212	134,616,987	94.4	55,258
Precious metals:						
Deep mines	1,604	2,845	68,764,692	83,885,928	0.4	37,755
Placer mines	678	880	6,810,482	10,237,252	92.2	5,436
Lead and zinc	977	1,142	24,453,299	31,363,094	95.7	24,397
Quicksilver	12	12	718,861	868,458	-44.0	640
Manganese	3	8	21,725	20,435	-88.5	65
BUILDING STONES:	3,988	4,603	63,641,585	75,992,908	.....	a101,129
Limestone	1,665	1,916	23,875,507	29,832,492	67.8	41,029
Granite	707	826	16,192,138	18,997,976	c96.2	22,211
Sandstone	595	677	6,626,438	7,702,423	-15.2	11,025
Marble	77	108	4,842,438	6,239,120	23.7	6,649
Slate	185	219	5,831,256	6,054,174	6.3	10,121
Traprock	196	220	5,090,538	5,678,317	.....	6,748
Bluestone	563	637	1,182,873	1,588,406	.....	3,020
MISCELLANEOUS:						
Asbestos	5	20	72,747	65,140	41.0	88
Asphaltum and bituminous rock	12	19	301,673	466,461	97.0	241
Barytes	23	42	176,967	224,766	10.6	372
Bauxite	10	10	316,221	670,829	423.2	726
Buhrstones and millstones	14	14	18,354	34,441	-42.4	79
Clay	261	336	2,289,198	2,945,948	42.9	4,351
Corundum and emery	4	6	7,459	18,185	-82.6	19
Feldspar	22	28	238,996	271,437	8.4	363
Fluorspar	13	15	319,426	288,509	4.7	376
Fuller's earth	16	21	274,776	315,762	221.7	380
Garnet	3	4	98,206	101,920	-23.3	120
Graphite	19	20	328,690	344,130	51.3	436
Grindstones	13	25	339,261	413,296	-38.1	430
Gypsum	78	222	4,905,662	5,812,810	d178.2	4,215
Infusorial earth	14	16	61,083	75,503	207.5	99
Magnesite	6	13	62,444	68,463	.....	84
Marl	3	3	17,812	13,307	4.4	38
Mica	73	78	182,828	206,794	74.0	608
Mineral pigments	23	26	115,860	151,015	-58.2	246
Monazite and sircon	4	4	50,909	64,472	.....	34
Oilstones, scythestones, and whetstones	21	45	99,259	206,028	80.8	232
Phosphate rock	70	153	7,421,430	10,781,192	119.0	8,573
Precious stones	23	27	195,908	315,464	-4.0	145
Pumice	3	4	6,087	30,097	.....	25
Pyrite	11	12	734,355	676,984	.....	1,160
Quartz	14	14	155,418	231,025	23.3	208
Sulphur	4	4	4,538,389	4,432,066	e439.4	460
Talc and soapstone	39	46	1,036,371	1,174,516	3.2	1,452
Tripoli	4	7	42,493	66,557	.....	73
Tungsten	22	116	365,780	563,457	9,330.2	227
ALL OTHER INDUSTRIES b.	10	27	740,874	778,938	-60.3	560

a Includes 326 persons, who could not be distributed among the several industries.

b Includes enterprises as follows: Antimony, 1; bismuth, 1; borax, 2; chromite, 2; manganese iron, 2; nickel and cobalt, 1; and tin, 1.

c Includes traprock.

d Includes tripoli and pumice.

e Includes pyrite.

f A minus sign denotes a decrease.

XX. THE MINERAL INDUSTRIES

succeeded in overcoming this difficulty. The essential conditions for condensation seem to be purity of the gas and vapor, including freedom from carbon dioxide. Electrothermic spelter is being made commercially at Trollhättan and Särpsborg, in Scandinavia, while W. McA. Johnson is making a few hundred pounds per day at Hartford, Conn. However, we are still a long way from knowing whether electric smelting is going to offer any advantage over the old method.

Hydrometallurgy.—No substantial progress appears to have been made

with the "bisulphite process," which has been exploited in Europe. The Bretherton process has been the subject of experimentation in California, and attention has been given to the Isherwood process at a works near New York. Mr. Keating of the Bully Hill Copper Co. has also been experimenting in the leaching of zinc and precipitation electrically, and has succeeded in obtaining a satisfactorily dense cathode deposit. All of this work has added to knowledge, without, however, promising definitely any considerable commercial advantage.

CENSUS OF MINES AND QUARRIES, 1909

Preliminary figures of the census of mines and quarries of Dec. 31, 1909, were published in September. The most important returns are thus summarized by the Bureau of the Census:

Operators and Expenditures.—In 1909 in the United States, exclusive of Alaska, Hawaii, Porto Rico and other outlying non-contiguous territory, 23,682 operators conducted 27,240 mines and quarries and 166,448 petroleum and natural gas wells. Of these operators, 19,933 operated enterprises which were productive in 1909, while 3,749 operators were engaged solely in development work. The total expenditures connected with the operations of the 19,933 productive enterprises in 1909 were \$1,042,642,693. Of this amount, \$586,774,079 was paid to wage earners and \$53,393,551 was paid to salaried employees for services. Supplies and materials utilized, including cost of fuel and rent of power, were valued at \$247,866,304; royalties and rent of mines amounted to \$63,973,585; contract work amounted to \$28,887,898; and miscellaneous expenses, including taxes, rent of offices and other sundry expenses, to \$61,747,276.

Value of Products.—The gross value of products of mines and quarries, including petroleum and natural gas wells, in 1909 was \$1,238,410,322. This amount includes a duplication of \$29,318,316, representing the value of ore and natural gas produced by one operator and used as material by another. With this amount de-

ducted from the gross value there remains \$1,209,092,006 as the net value of the products. Of the total value of products, \$1,047,299,645, or 84.6 per cent., was produced by 1,422, or 7.1 per cent. of the total number of operators.

In the distribution of the value of products by states, Pennsylvania, with a product valued at \$349,059,786, or 28.2 per cent. of the product of all states, ranked first. Of Pennsylvania's products, bituminous and anthracite coal contributed \$296,424,311, or 84.9 per cent. of the total for the state. Other states with a product of over \$25,000,000, with the value of their products, were as follows: Illinois, \$76,658,974; West Virginia, \$76,287,889; Michigan, \$67,714,479; Ohio, \$63,767,112; California, \$63,382,454; Minnesota, \$58,664,852; Montana, \$54,991,961; Colorado, \$45,680,135; Arizona, \$34,217,651; Missouri, \$31,667,525; Oklahoma, \$25,637,982.

Persons Engaged in the Industry.

—The total number of persons engaged in connection with producing mines, quarries and wells, as reported on Dec. 15, 1909, or nearest representative day, was 1,139,332, of whom wage earners numbered 1,065,283, proprietors and firm members 29,922, and salaried employees 44,127. In mines, quarries and wells, for which development work only was carried on there were a total of 27,616 persons, of whom 21,499 were wage earners. Of the total number of persons, 1,166,948, employed in pro-

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ductive and non-productive mines, 1,158,775 were men 16 years of age and over, and 8,173 were boys under 16 years of age.

Capital Invested.—The total capital invested in all mining enterprises on Dec. 31, 1909, as reported, was \$3,662,527,064, of which \$3,380,525,841 was invested in productive enterprises and \$282,001,223 in those in which development work only was carried on.

Growth of the Industry Since 1902.—For those mining industries for which statistics are included in the census reports for both 1909 and 1902, the value of products increased from \$771,486,926 to \$1,175,475,001, or 52.4 per cent., while the payments for salaries and wages increased from \$401,225,547 to \$625,610,068, or 55.9 per cent.

The most important absolute increase in value of products occurred in the coal industry, the value of products of this industry increasing from \$366,600,000 in 1902 to \$550,500,000 in 1909. The value of bituminous coal, exclusive of coke, which was not included among min-

ing products in 1902, increased from \$195,934,190 in 1902 to \$302,796,278 in 1909, while the value of anthracite increased from \$41,623,406 to \$96,900,406. A portion of this latter increase is doubtless due to the fact that in 1909, on account of the strike, the figures for the production of anthracite coal did not represent normal conditions. Other important increases in value of product were: petroleum and natural gas from \$102,034,590 to \$175,527,807; iron from \$65,460,985 to \$106,947,082; copper from \$51,178,036 to \$99,493,799.

Mining Industry in Alaska, Hawaii, and Porto Rico.—In Alaska in 1909 there were 673 operators who employed 8,025 persons in the mining industry. The total expenses of these operators amounted to \$13,220,200, while the capital invested was reported as \$47,749,164. The total value of products was \$16,933,427, of which amount \$16,327,752 consisted of gold and silver. In Hawaii and Porto Rico the total value of product for the 18 operators reported was only \$26,414.

STATISTICS OF MINERAL PRODUCTION

I. WORLD'S PRINCIPAL MINERAL PRODUCTS, 1900-11

(In metric tons)

(*The Mineral Industry*)

	1900	1905	1907	1909	1910	1911
METALS:						
Aluminum....	7,339	16,810	32,529	24,292	23,000	44,700
Antimony ¹	4,122	7,112	8,167	12,117	12,354	.....
Copper.....	491,435	698,931	724,120	854,758	877,494	880,098
Lead.....	770,082	884,986	939,321	1,003,243	971,492	984,646
Manganese ore.	1,589,075	2,028,560	2,922,402	2,621,166	2,677,731	.....
Nickel.....	7,892	133,869	111,340	94,884	132,336	.....
Pig iron.....	39,599,457	54,054,783	60,680,014	61,217,064	65,860,084	63,251,731
Platinum ²	212,000	200,768	142,927	198,330	286,952	.....
Quicksilver....	3,308	3,331	3,255	3,801	3,734	.....
Steel.....	28,727,239	43,900,648	51,273,340	53,499,974	58,622,773	58,377,286
Tin.....	82,117	100,795	99,861	109,637	105,764	105,755
Zinc.....	465,438	563,565	737,108	784,199	815,805	877,697
NON-METALS:						
Asphaltum....	322,896	353,827	519,614	477,185	511,217	.....
Coal.....	765,138,033	928,049,163	1,098,468,506	1,083,996,876	1,143,739,902	.....
Graphite.....	79,939	87,047	105,889	91,135	93,461	.....
Petroleum....	19,484,471	29,878,112	36,405,790	39,197,385	44,236,973	44,659,338
Phosphate rock	2,795,149	3,845,552	4,492,594	4,441,043	4,007,963	4,979,073
Salt.....	12,020,633	13,229,081	13,982,776	14,068,287	.....	.....
Sulphur.....	581,282	830,609	801,911	817,608	.....	.....

¹ Figures are for Austria, China, France, Hungary, Italy, and Japan.

² Troy ounces. Statistics from *Mineral Resources of the United States*.

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II. MINERAL PRODUCTION BY PRINCIPAL COUNTRIES, 1900-11

(In metric tons)

(The Mineral Industry)

	1900	1905	1907	1909	1910	1911
COAL						
Australasia.....	7,599,269	8,255,250	10,581,009	11,257,898	12,247,734	12,096,030
Austria-Hungary.....	39,027,929	40,725,000	40,112,550	39,842,749	38,006,840	40,116,743
Belgium.....	23,462,817	21,844,200	23,705,190	23,561,125	23,127,230	23,112,062
France.....	33,404,298	36,048,264	36,753,627	37,971,858	38,570,473	.....
Germany.....	149,788,256	173,663,774	205,542,688	217,322,270	221,986,376	234,059,061
Japan.....	7,429,457	11,895,000	13,716,488	14,019,626	14,794,208	16,020,000
Russia.....	14,759,866	17,120,000	21,207,500	24,083,000	24,572,403	.....
United Kingdom.....	228,772,886	239,888,928	267,828,276	263,774,822	264,505,207	268,029,000
United States.....	243,414,164	351,120,625	435,483,938	402,981,688	445,816,040	455,720,550
Other countries.....	17,879,289	27,468,122	33,087,260	35,422,502	58,805,832	12,612,029
COPPER						
Africa.....	6,828	7,442	6,838	15,185	15,449	17,252
Australasia.....	23,368	34,483	41,910	34,952	40,962	42,512
Austria-Hungary.....	1,377	1,346	1,062	6,218	2,276	2,566
Bolivia.....	2,134	2,032	21,035	2,032	2,540	1,829
Canada.....	8,595	21,595	2,540	21,626	23,810	25,570
Chile.....	26,016	29,126	28,863	42,726	38,346	33,088
Cuba.....	.....	.....	1,388	3,006	3,538	3,753
Germany.....	20,635	22,492	20,818	32,815	25,105	22,363
Italy.....	2,797	2,997	3,353	2,769	3,272	2,642
Japan.....	28,285	35,944	40,183	42,987	50,703	52,303
Mexico.....	22,473	65,449	57,491	57,230	62,504	61,884
Newfoundland.....	2,929	2,316	1,758	1,402	1,097	1,174
Norway.....	3,998	6,406	7,122	6,226	10,592	9,576
Peru.....	8,353	12,213	20,681	16,257	27,375	28,500
Russia.....	8,128	9,515	15,930	18,035	22,670	25,980
Spain-Portugal.....	53,718	45,527	50,470	53,023	51,080	52,880
Sweden.....	457	1,385	1,577	2,032	2,032	2,032
United States.....	274,933	397,069	398,930	501,372	492,672	491,634
Other countries.....	3,194	1,595	2,171	1,865	1,423	2,560
LEAD						
Australasia (a).....	87,100	104,639	97,000	77,200	23,962	19,352
Austria.....	10,650	12,968	13,598	12,941	13,100	15,000
Belgium.....	16,365	22,885	27,450	40,306	40,715	30,800
Canada.....	28,648	25,391	21,660	23,295	14,967	10,673
France.....	15,210	24,100	24,800	26,927	20,226	23,000
Germany.....	121,513	152,590	164,079	167,920	159,851	161,287
Greece.....	16,396	13,729	13,814	14,948	16,710	14,300
Italy.....	23,673	19,097	22,978	22,133	14,495	16,700
Mexico.....	63,827	101,196	76,158	118,186	120,662	125,605
Spain.....	172,530	185,693	185,800	179,993	151,975	171,000
United Kingdom.....	35,500	28,494	35,730	34,822	32,168	27,100
United States.....	253,204	290,472	322,854	334,832	355,183	363,829
Other countries.....	5,552	5,694	5,868	5,391	7,477	7,000
PETROLEUM						
Dutch East Indies.....	.....	1,062,224	2,200,000	1,497,275	1,700,000	1,590,000
Galicia.....	.....	794,862	1,176,000	2,150,000	1,491,600	1,300,000
India.....	151,523	581,519	587,000	905,336	872,000	1,043,000
Roumania.....	250,000	614,870	1,129,097	1,263,946	1,352,300	1,540,000
Russia.....	10,524,919	7,505,637	8,435,708	8,037,300	8,952,793	8,290,000
United States.....	8,262,406	18,969,000	22,287,985	24,433,528	28,331,000	29,000,000
Other countries.....	557,112	350,000	590,000	910,000	1,328,880	1,896,338
PIG IRON						
Austria-Hungary.....	1,311,949	1,372,300	1,405,000	1,958,786	2,010,000	2,095,000
Belgium.....	1,161,180	1,310,290	1,427,940	1,632,350	1,803,500	2,103,120
Canada.....	87,612	475,491	590,444	687,923	752,053	837,575
France.....	2,714,298	3,077,000	3,588,949	3,632,105	4,032,459	4,410,856
Germany.....	7,549,665	10,987,623	13,045,769	12,917,653	14,793,325	15,280,527
Italy.....	23,990	31,300	32,000	207,800	215,000	235,000
Russia.....	2,296,191	2,125,000	2,768,220	2,871,332	2,740,000	2,865,000
Spain.....	289,788	383,100	385,000	389,000	367,000	353,500
Sweden.....	526,868	531,200	603,100	443,000	604,300	633,800
United Kingdom.....	9,003,046	9,746,221	10,082,638	9,818,916	10,380,723	9,874,620
United States.....	14,009,870	23,340,258	26,193,863	26,108,199	27,636,687	24,027,733
Other countries.....	625,000	653,000	556,900	550,000	525,000	535,000

(a) Pig lead smelted in New South Wales and Queensland.

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MINERAL PRODUCTION BY PRINCIPAL COUNTRIES—Continued

	1900	1905	1907	1909	1910	1911
STEEL						
Austria-Hungary.....	1,145,654	1,188,000	1,195,500	1,969,538	2,154,832	2,475,437
Belgium.....	655,199	1,023,500	1,183,500	1,370,000	1,449,500	1,537,000
Canada.....	23,954	403,449	516,300	766,795	835,478	880,278
France.....	1,665,164	2,210,284	2,677,805	3,034,571	3,506,497	3,668,678
Germany.....	6,445,869	10,066,553	12,068,632	12,049,834	13,698,638	15,019,833
Italy.....	115,887	117,300	115,000	661,600	635,000	646,500
Russia.....	2,217,752	1,650,000	2,076,000	2,471,000	2,350,000	2,519,000
Spain.....	144,355	237,864	247,100	227,000	219,000	228,230
Sweden.....	300,536	340,000	443,000	310,600	468,600	458,300
United Kingdom.....	5,130,800	5,983,691	6,627,112	5,975,734	6,476,791	6,565,321
United States.....	10,382,069	20,354,291	23,733,391	24,338,802	26,512,437	24,054,309
Other countries.....	400,000	426,000	405,000	325,000	315,000	325,000
ZINC						
Austria.....	6,742	9,204	11,208	12,638	13,305	13,925
Belgium.....	119,315	142,555	154,492	167,100	172,578	195,102
France.....	36,305	43,200	49,733	49,718	51,527	55,170
Germany.....	155,799	198,208	208,195	219,766	227,754	235,776
Holland.....	6,845	13,550	14,990	19,548	20,975	22,734
Italy.....	547	5	88	(a)	(a)	(a)
Russia.....	5,963	7,520	10,409	7,949	8,128	9,652
Spain.....	5,611	6,184	6,000	6,400	6,604	9,053
United Kingdom.....	30,207	50,125	55,595	59,350	63,587	67,907
United States.....	111,794	183,014	226,398	241,730	251,348	268,378

(a) Included in Austria.

III. WORLD'S PRODUCTION AND COINAGE OF PRECIOUS METALS, 1841-1911

(Report of the Director of the Mint)

PERIOD	GOLD		SILVER		Commercial Ratio of Silver to Gold
	Fine Ounces	Value	Fine Ounces	Value	
PRODUCTION:					
1841-1850 (average) ..	1,760,602	\$36,393,000	25,090,342	\$32,440,000	15.83
1851-1855 (average) ..	6,410,324	132,513,000	28,488,597	36,824,000	15.41
1856-1860 (average) ..	6,486,262	134,083,000	29,095,428	37,618,000	15.30
1861-1865 (average) ..	5,949,582	122,989,000	35,401,972	45,772,000	15.40
1866-1870 (average) ..	6,270,086	129,614,000	43,051,583	55,663,000	15.55
1871-1875 (average) ..	5,591,014	115,577,000	63,317,014	81,864,000	15.98
1876-1880 (average) ..	5,543,110	114,586,000	78,775,602	101,851,000	17.86
1881-1885 (average) ..	4,794,755	99,116,000	92,003,944	118,955,000	18.62
1886-1890 (average) ..	5,461,282	112,895,000	108,911,431	140,815,000	21.14
1891-1895 (average) ..	7,882,565	162,947,000	157,581,331	203,742,000	27.06
1896-1900 (average) ..	12,446,939	257,301,100	165,693,304	214,229,700	33.50
1901.....	12,625,527	260,992,900	173,011,283	223,691,300	34.68
1902.....	14,354,680	296,737,600	162,763,483	210,441,900	39.15
1903.....	15,852,620	327,702,700	167,689,322	216,810,300	38.10
1904.....	16,804,372	347,377,200	164,195,266	212,292,900	35.70
1905.....	18,396,451	380,288,700	172,317,688	222,794,500	33.87
1906.....	19,471,080	402,503,000	165,054,497	213,403,800	30.54
1907.....	19,977,260	412,966,600	184,206,984	238,166,600	31.24
1908.....	21,422,244	442,476,900	203,131,404	262,634,500	38.64
1909.....	21,969,303	454,145,700	210,453,431	272,101,400	39.74
1910.....	21,996,297	454,703,900	222,879,362	288,167,300	38.22
1911.....	22,222,352	459,377,300	225,372,844	121,701,000	38.33
COINAGE:					
1873-1880 (average) ..	8,665,153	179,124,608	91,460,904	118,252,482	.....
1881-1890 (average) ..	5,898,643	121,935,781	97,881,838	126,554,296	.....
1891-1900 (average) ..	13,707,461	283,358,375	116,010,359	149,993,192	.....
1901.....	12,001,537	248,093,787	107,439,666	138,911,891	.....
1902.....	10,662,098	220,405,125	149,826,725	193,715,362	.....
1903.....	11,634,166	240,499,547	161,159,508	211,795,829	.....
1904.....	22,031,285	455,427,085	136,518,406	176,508,646	.....
1905.....	11,898,037	245,954,257	134,062,314	173,333,093	.....
1906.....	17,721,058	366,326,788	120,339,501	155,590,466	.....
1907.....	19,921,014	411,803,902	171,561,490	221,816,867	.....
1908.....	15,828,573	327,205,649	151,352,824	195,688,499	.....
1909.....	15,153,116	313,242,714	87,728,951	113,427,331	.....
1910.....	22,004,542	454,874,248	78,786,842	108,915,627	.....
1911.....	.....	372,143,555	117,237,838	148,156,282	.....

XX. THE MINERAL INDUSTRIES

IV. MINERAL PRODUCTION OF THE UNITED STATES, 1900-11

(United States Geological Survey)

	1900	1905	1907	1909	1910	1911
METALS:						
Iron ore...long tons		42,526,133	51,720,619	51,155,437	56,889,734	40,989,808
Iron, pig...long tons	13,789,242	22,992,380	25,781,361	25,795,471	27,303,567	23,257,288
Steel...long tons	10,188,329	20,023,947	23,362,594	23,955,021	26,094,919	23,675,501
Silver...troy ounces	57,647,000	56,101,600	56,504,700	54,721,500	57,137,900	60,399,400
Gold...troy ounces	3,829,897	4,265,742	4,822,129	4,822,129	4,657,017	4,687,053
Copper...pounds	606,117,166	901,907,843	808,996,491	1,092,951,624	1,080,159,509	1,097,232,749
Lead...short tons	270,824	302,000	65,1663	354,188	372,227	406,148
Zinc...short tons	123,886	203,849	223,745	230,225	252,479	271,621
Quicksilver...flasks	28,317	30,451	21,567	21,075	20,601	21,256
Aluminum...pounds	47,150,000	11,347,000	47,211,000	34,210,000	47,734,000	46,125,000
Antimonial lead sh.t.			9,910	12,896	14,069	14,078
Platinum...troy oz.	400	318	357	638	773	940
NON-METALS:						
Fuels:						
Bitum. coal b.sh.t.	212,316,112	315,062,785	394,759,112	379,744,257	417,111,142	405,757,101
Penn. anthracite.l.t.	51,221,353	69,339,152	76,432,421	72,384,249	75,433,246	80,771,488
Coke...short tons		32,231,129	40,779,564	39,315,065	41,708,810	35,551,489
Petroleum...barrels	63,620,529	134,717,580	166,095,335	183,170,874	209,557,248	220,449,391
Structural Materials:						
Cement...barrels	17,231,150	40,102,308	52,230,342	66,689,715	77,785,141	79,547,958
Lime...short tons		2,984,100	3,092,524	3,484,974	3,505,954	3,392,915
Sand & gravel. sh. t.		22,144,633	40,664,622	58,461,100	67,949,347	65,308,273
Abrasive Materials:						
Corundum and emery...short tons	4,305	2,126	1,069	1,580	1,028	659
Garnet...short tons	3,185	5,050	7,058	2,972	3,814	4,076
Pumice...short tons		1,832	8,112	15,103	23,271	21,687
Chemical Materials:						
Arsenic oxide. lbs.		1,507,386	3,502,000	2,428,000	2,994,000	6,264,000
Borax (crude). sh. t.	25,837	46,334	52,850	41,434	42,357	53,330
Bromine...pounds	521,444	1,192,758	1,379,496	569,725	245,437	651,541
Fluorspar...sh. ton.	18,450	57,385	49,486	50,742	69,427	87,048
Gypsum short tons	594,462	1,043,202	1,751,748	2,252,785	2,379,057	2,323,970
Phosphate rock. l. t.	1,491,216	1,947,190	2,265,343	2,330,152	2,654,988	3,053,279
Pyrite...long tons	204,615	253,000	247,387	247,070	241,612	301,458
Sulphur...long tons	c 3,525	181,677	293,106	239,312	255,534	266,664
Salt...barrels	20,869,342	25,966,122	29,704,128	30,107,646	30,305,656	31,183,968
Pigments:						
Barytes...short tons	67,680	48,235	89,621	61,945	42,975	38,445
Mineral paints.sh.t.	57,426	63,521	75,566	78,771	85,304	143,350
Zinc oxide...sh. t.	48,840	68,603	71,784	68,974	58,481	
Miscellaneous:						
Asbestos...short tons	1,054	3,109	653	3,085	3,693	7,604
Asphalt...short tons	54,389	115,267	223,861	228,655	260,080	360,004
Bauxite...long tons	23,184	48,129	97,776	129,101	148,932	155,618
Chromic iron ore...long tons	140	22	290	598	205	120
Feldspar...short tons	24,821	35,419	91,799	76,539	81,102	92,700
Fuller's earth...sh. t.	9,698	25,178	32,851	33,486	32,822	40,697
Glass sand...sh. t.		1,060,334	1,187,296	1,104,451	1,461,089	1,538,666
Graphite...sh. tons	3,365	24,971	29,277	8,243	38,740	3,618
Magnetite...sh. tons	2,252	3,933	7,561	9,465	12,443	9,375
Manganese ore.l. t.	11,771	4,118	5,604	1,544	2,258	2,457
Manganiferous ore...long tons			103,844	68,654	61,101	44,437
Mica...pounds	11,450,283	3,176,875	3,555	9,989,582	10,606,190	8,911,201
Mineral waters...gallons sold	47,558,784	46,544,361	52,060,520	64,674,486	62,030,125	63,923,119
Quartz...short tons	32,495	51,145	33,192	135,469	63,577	87,943
Talc and soapstone...short tons	27,943	40,134	72,010	81,802	79,006	81,521
Talc, fibrous...sh. t.	63,500	56,500	67,800	48,536	71,710	62,030
Thorium minerals (monazite) and siron...pounds	908,006	1,352,418	548,152	543,931	99,301	3,208
Tungsten ore...sh. t.	40	803	1,640	1,619	1,821	1,139

a Consumption. b Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania. c Short tons.

XX. THE MINERAL INDUSTRIES

V. VALUE OF MINERAL PRODUCTS OF THE UNITED STATES, 1900-11

(United States Geological Survey)

	1900	1905	1907	1909	1910	1911
METALS:						
Iron ore	\$66,590,504	\$75,165,604	\$131,996,147	\$109,964,903	\$140,735,607	\$86,419,830
Iron, pig (a)	259,944,000	382,450,000	529,958,000	419,175,000	425,115,235	327,334,624
Silver	35,741,100	34,221,976	37,299,700	28,181,681	30,568,773	32,615,700
Gold	79,171,000	88,180,700	90,435,700	99,673,400	96,269,100	96,890,000
Copper	98,494,039	139,795,716	173,799,300	142,083,711	137,180,257	137,154,092
Lead	23,561,688	28,690,000	38,707,596	30,460,168	32,755,976	36,563,320
Zinc	10,654,196	24,054,182	26,401,910	24,864,300	27,267,732	30,964,794
Quicksilver	1,302,586	1,103,120	828,931	957,859	958,153	977,989
Aluminum	1,920,000	3,246,300	4,926,948	6,575,000	8,955,700	8,084,000
Antimonial lead			1,322,985	1,231,019	1,338,090	1,380,556
Platinum	2,500	5,320	10,589	15,950	25,277	40,890
NON-METALS: (a)						
Fuels:						
Bituminous coal	220,930,313	334,658,294	451,214,842	405,486,777	469,281,719	451,177,484
Penn. anthracite	85,757,851	141,879,000	163,584,056	149,181,587	160,275,302	175,189,392
Coke		72,476,196	111,539,126	89,965,483	99,742,701	84,130,849
Petroleum	75,989,313	84,157,399	120,106,749	128,328,487	127,896,328	134,044,752
Natural gas		41,562,855	54,222,399	63,206,941	70,756,158	74,127,534
Structural Materials:						
Clay products	96,212,345	149,697,188	158,942,369	166,321,213	170,115,974	162,236,181
Cement	13,283,581	35,931,533	55,903,851	53,610,563	68,752,092	66,705,136
Lime	6,797,496	10,941,680	12,656,705	13,846,072	13,894,962	13,689,054
Sand and gravel		10,115,915	13,242,002	17,173,615	19,520,919	19,614,850
Stone	36,970,777	63,798,748	71,105,805	71,345,199	76,520,584	77,108,567
Abrasive Materials:						
Grindstones	710,026	777,606	896,022	804,051	796,294	907,316
Corundum and emery	102,715	61,464	12,294	18,185	15,077	6,778
Garnet	123,475	148,095	211,686	102,315	113,574	121,748
Pumice		5,540	33,818	33,439	94,943	88,399
Oilstones, etc.	174,087	244,546	264,188	214,019	228,649	214,991
Chemical Materials:						
Arsenious oxide		32,210	163,000	52,946	52,305	73,408
Borax (crude)	1,018,251	1,019,154	1,121,520	1,534,365	1,201,842	1,569,151
Bromine	140,790	178,914	195,281	57,600	41,684	110,902
Fluorspar	94,500	362,488	287,282	291,747	430,196	611,447
Gypsum	1,627,203	3,029,227	4,942,264	5,906,738	6,523,029	6,462,035
Phosphate rock	5,359,248	6,763,403	10,653,558	10,772,120	10,917,000	11,900,693
Pyrite	749,991	938,492	794,949	1,028,157	958,608	1,164,871
Sulphur	88,100	3,706,560	5,142,850	4,432,066	4,605,112	4,787,049
Salt	6,944,603	6,005,922	7,608,323	8,343,831	7,900,344	8,345,692
Pigments:						
Barytes (crude)	188,089	148,803	291,777	209,737	121,746	122,792
Mineral paints	644,089	1,697,130	2,984,935	2,373,805	2,174,735	7,842,583
Zinc oxide	3,667,210	5,520,240	6,490,660	6,156,735	5,325,636	
Miscellaneous:						
Asbestos	16,310	42,975	11,899	62,603	68,357	119,935
Asphalt	415,958	758,153	2,826,489	2,138,273	3,080,67	3,828,751
Bauxite	89,676	240,292	480,330	679,447	716,258	750,649
Chromic iron ore	1,400	375	5,640	8,300	2,729	1,629
Feldspar	180,971	226,157	558,944	424,602	502,452	579,008
Fuller's earth	67,535	214,497	291,773	301,604	293,709	383,124
Glass sand		1,107,730	1,250,067	1,163,375	1,516,711	1,543,733
Graphite	197,579	318,211	296,970	345,509	377,176	288,465
Magnesite	19,333	15,221	22,683	37,860	74,658	75,000
Manganese ore	100,289	36,214	63,369	10,675	22,892	24,586
Magniferous ore			259,473	215,925	186,765	115,918
Mica	147,960	178,588	392,111	280,529	337,097	355,804
Mineral waters	6,245,172	6,491,251	7,331,503	6,894,134	6,357,590	6,837,888
Quartz	86,351	104,109	223,801	249,466	193,757	155,122
Talc & soapstone	383,541	637,062	905,047	862,002	684,213	1,032,732
Talc, fibrous	499,500	445,000	626,000	359,957	728,180	613,286
Thorium minerals (monazite), & zircon						
	48,805	163,908	65,800	65,282	12,006	802
Tungsten ore						
	11,040	268,676	890,048	614,370	807,307	407,985

(a) "Spot" value, that is, value at the point of production.

XX. THE MINERAL INDUSTRIES

VI. MINERAL PRODUCTION BY STATES, 1900-11

(United States Geological Survey)

	1900	1905	1907	1909	1910	1911
METALS:						
COPPER (pounds):						
Alaska.....		4,900,866	7,034,763	4,057,142	4,311,026	22,314,889
Arizona.....	118,317,764	235,908,150	256,778,437	291,110,298	297,250,538	303,202,532
California.....	28,511,225	16,697,489	33,696,602	53,568,708	45,760,200	35,835,651
Colorado.....	7,826,949	9,404,830	13,998,496	11,485,631	9,307,497	9,791,861
Idaho.....	290,162	7,321,585	9,707,299	7,096,132	6,877,515	4,514,116
Michigan.....	145,461,498	230,287,992	219,131,503	227,005,923	221,462,984	218,185,236
Montana.....	270,738,489	314,750,582	224,263,789	314,858,291	283,078,473	271,814,491
Nevada.....	407,535	413,292	1,998,164	53,849,281	64,494,640	65,561,015
New Mexico.....	4,169,400	5,334,192	10,140,140	5,031,136	3,784,609	2,860,400
Tennessee.....			19,475,119	19,207,747	16,691,777	18,965,143
Utah.....	18,354,726	58,153,393	60,418,370	101,241,114	125,185,455	142,340,215
GOLD (fine ounces):						
Alaska.....	395,271	722,026	894,424	984,015	787,148	774,144
Arizona.....	202,856	130,192	128,871	127,082	165,113	142,938
California.....	765,109	928,660	815,288	1,001,625	988,854	982,544
Colorado.....	1,394,622	1,243,291	1,010,921	1,056,923	992,967	926,568
Idaho.....	83,433	52,032	60,754	65,031	50,113	56,563
Montana.....	227,266	236,520	167,987	181,427	179,974	153,341
Nevada.....	97,050	259,246	745,507	792,752	913,015	917,605
New Mexico.....	40,292	12,858	15,964	12,230	23,084	30,955
Oregon.....	81,980	60,222	59,124	40,104	32,960	28,988
South Dakota.....	298,842	334,460	200,185	318,026	260,266	359,444
Utah.....	192,155	248,691	247,758	203,836	208,627	227,834
Washington.....	34,743	17,899	12,689	20,754	38,992	24,407
Other states.....	16,278	19,645	12,225	6,333	8,431	23,547
IRON ORE (long tons):						
Alabama.....	2,759,247	3,782,831	4,039,453	4,321,252	4,801,275	3,955,582
Michigan.....	9,926,727	10,885,902	11,830,342	11,900,384	13,303,906	8,944,393
Minnesota.....	9,834,399	21,735,182	28,969,658	28,975,149	31,966,769	23,398,406
New Jersey.....	344,247	526,271	549,760	543,720	521,832	359,721
New York.....	441,485	1,139,937	1,375,020	1,015,333	1,287,209	1,057,984
Pennsylvania.....	877,684	808,717	837,287	666,889	739,799	514,929
Tennessee.....	594,171	734,770	813,690	657,795	732,247	469,728
Virginia.....	1,921,821		786,856	837,847	903,377	610,871
Wisconsin.....	746,105	859,283	838,744	1,067,436	1,149,551	559,763
IRON, PIG (long tons):						
Alabama.....	1,184,337	1,604,062	1,686,674	1,763,617	1,969,770	1,617,150
Illinois.....	1,363,383	2,034,483	2,457,768	2,467,156	2,606,335	2,036,081
New York.....	292,827	1,198,068	1,659,752	1,733,675	1,895,018	1,537,201
Ohio.....	2,470,910	4,586,110	5,250,687	5,551,545	5,584,279	5,371,378
Pennsylvania.....	6,365,935	10,579,127	11,348,549	10,918,824	11,014,652	9,581,109
Tennessee.....	362,190	372,692	393,106	333,845	400,269	297,594
Virginia.....	490,617	510,210	478,771	391,134	402,625	308,789
LEAD (short tons):						
Colorado.....	82,137	56,638	48,876	29,326	35,685	
Idaho.....	85,444	99,027	112,569	97,183	99,924	
Missouri.....		104,058	122,856	142,650	161,659	
Utah.....	48,044	44,996	61,699	64,534	57,081	
Wisconsin.....			3,551	3,238	3,884	
SILVER (fine ounces):						
Arizona.....	2,995,500	2,605,700	2,903,100	2,523,600	2,655,700	1,594,428
California.....	941,400	1,082,000	1,590,000	2,304,900	1,791,600	2,727,336
Colorado.....	20,483,900	12,942,800	11,495,400	8,846,300	8,523,000	7,530,940
Idaho.....	6,429,100	8,125,600	7,888,400	6,755,900	7,027,000	7,507,802
Michigan.....	102,000	253,000	331,300	217,600	262,200	507,234
Montana.....	14,195,400	13,454,700	11,129,600	12,034,500	12,282,900	11,116,778
Nevada.....	1,358,700	5,863,500	8,280,500	10,119,200	12,366,000	10,651,571
New Mexico.....	434,300	354,900	599,500	324,200	779,000	1,142,335
South Dakota.....	536,200	179,000	106,600	196,300	120,600	206,188
Texas.....	477,400	417,200	305,300	408,100	364,400	442,486
Utah.....	9,267,600	10,319,800	11,406,900	10,551,100	10,445,900	12,679,633
Washington.....	224,500	119,400	84,000	75,200	204,900	142,196
ZINC (short tons):						
Colorado.....		6,599	26,077	20,121	23,238	42,233
Kansas.....	62,136	114,287	13,850	9,185	10,220	6,843
Missouri.....	14,741	11,844	141,824	140,676	140,652	127,540
Montana.....				4,725	12,408	22,115
New Jersey.....			13,573	16,035	20,217	15,128
Utah.....			1,972	5,960	7,221	7,004
Wisconsin.....			15,273	20,381	19,752	31,809

XX. THE MINERAL INDUSTRIES

VI. MINERAL PRODUCTION BY STATES, 1900-11—Continued

	1900	1905	1907	1909	1910	1911
NON-METALS:						
CEMENT (barrels):						
California.....	44,565	1,225,429	.....	3,936,581	5,805,098	6,317,701
Illinois.....	240,442	1,545,500	2,036,093	4,241,392	4,459,450	4,582,341
Indiana.....	30,000	3,127,042	3,782,841	7,026,081	7,219,199	7,407,830
Iowa.....	.....	.....	.....	.....	.....	1,952,590
Kansas.....	80,000	230,686	3,353,925	5,334,299	5,655,808	4,871,903
Michigan.....	664,750	2,773,283	3,572,668	3,212,751	3,687,719	3,686,716
Missouri.....	.....	3,879,542	.....	3,445,076	4,455,589	4,114,859
New Jersey.....	1,169,212	3,654,777	4,449,896	4,046,322	4,154,698	4,411,890
New York.....	465,832	2,111,411	2,290,955	2,139,884	3,296,350	3,314,217
Ohio.....	534,215	1,312,977	1,151,176	1,813,521	1,527,670	1,451,852
Pennsylvania.....	4,984,417	13,813,487	20,393,965	22,869,614	26,075,978	26,864,779
COAL (short tons):						
Alabama.....	8,394,275	11,866,069	14,250,454	13,703,450	16,111,462	15,021,421
Arkansas.....	1,447,945	1,934,673	2,670,438	2,377,157	1,905,958	2,106,789
Colorado.....	5,244,364	8,826,429	10,790,236	10,716,936	11,973,736	10,157,383
Illinois.....	25,767,981	38,434,363	51,317,146	50,904,990	45,900,246	53,679,116
Indiana.....	6,484,086	11,895,252	13,985,713	14,834,259	18,389,815	14,201,355
Iowa.....	5,202,939	6,798,609	7,574,322	7,757,762	7,928,120	7,331,648
Kansas.....	4,467,870	6,423,979	7,322,449	6,986,478	4,921,451	6,254,228
Kentucky.....	5,328,964	8,432,523	10,754,124	10,697,384	14,623,319	13,706,839
Maryland.....	4,024,688	5,108,539	5,532,628	4,023,241	5,217,125	4,685,795
Michigan.....	849,475	1,473,211	2,035,858	1,784,692	1,534,967	1,476,074
Missouri.....	3,540,103	3,983,378	3,997,936	3,756,530	2,982,433	3,760,607
Montana.....	1,661,775	1,643,832	2,016,857	2,553,940	2,920,970	2,976,358
New Mexico.....	1,299,299	1,649,933	2,628,959	2,801,128	3,508,321	3,148,158
Ohio.....	18,988,150	25,552,950	32,142,419	27,939,641	34,209,668	30,759,986
Oklahoma.....	1,922,298	2,924,427	3,642,658	3,119,377	2,046,226	3,074,242
Pennsyl- Anth.....	57,367,915	77,659,850	85,604,312	81,070,359	84,485,236	90,464,067
vania? Bitum.....	79,842,326	118,413,637	150,143,177	137,966,791	150,521,526	144,734,163
Tennessee.....	3,509,562	5,766,690	6,810,243	6,358,645	7,121,380	6,433,156
Texas.....	968,373	1,200,684	1,648,069	1,824,440	1,892,176	1,974,593
Utah.....	1,147,027	1,332,372	1,947,607	2,266,899	2,517,809	2,513,175
Virginia.....	2,393,754	4,275,271	4,710,895	4,752,217	6,507,997	6,864,667
Washington.....	2,474,093	2,864,926	3,680,532	3,602,263	3,911,899	3,572,815
West Virginia.....	22,647,207	37,791,580	48,091,583	51,849,220	61,671,019	59,831,580
Wyoming.....	4,014,602	5,602,021	6,252,990	6,393,109	7,533,088	6,744,864
COKE (short tons):						
Alabama.....	2,110,837	2,576,986	3,021,794	3,085,824	3,249,027	.....
Colorado (d).....	618,755	1,378,824	1,421,579	1,251,805	1,346,211	.....
Illinois.....	.....	10,307	372,697	1,276,956	1,514,504	.....
New Mexico.....	44,774	89,638	265,125	373,967	401,646	.....
Ohio.....	72,116	277,130	270,634	222,711	282,315	.....
Pennsylvania.....	13,357,295	20,573,736	26,513,214	24,905,525	26,315,607	.....
Tennessee.....	475,432	468,092	467,499	261,808	322,756	.....
Virginia.....	685,156	1,499,481	1,545,280	1,347,478	1,493,655	.....
West Virginia.....	2,358,499	3,400,593	4,112,896	3,943,948	3,803,850	.....
NATURAL GAS (values):						
California.....	\$79,083	\$133,696	\$168,397	\$446,933	\$476,697	\$800,714
Illinois.....	1,700	7,223	143,577	644,401	613,642	687,726
Indiana.....	7,254,539	3,094,134	1,572,605	1,616,903	1,473,403	1,192,418
Kansas.....	356,900	2,261,836	6,198,583	8,293,846	7,755,367	4,854,534
Kentucky.....	.....	237,290	380,176	485,192	456,293	407,689
New York.....	335,367	623,251	766,157	1,222,666	1,678,720	1,418,767
Ohio.....	2,178,234	5,721,462	8,718,562	9,966,938	8,626,954	9,367,347
Oklahoma.....	.....	130,137	417,221	1,806,193	3,490,704	6,731,770
Pennsylvania.....	10,215,412	19,197,338	18,844,156	20,475,207	21,475,057	18,010,796
West Virginia.....	2,959,032	10,075,804	16,670,962	17,538,565	23,816,553	28,451,907
PETROLEUM (bbls.):						
California.....	4,324,484	33,427,473	39,748,375	55,471,601	73,010,560	81,134,391
Colorado.....	317,385	376,238	331,851	310,861	239,794	226,026
Illinois.....	200	181,084	24,281,973	30,898,339	33,143,362	31,317,038
Indiana.....	4,874,392	10,064,247	5,128,037	2,296,086	2,150,725	1,695,289
Kansas.....	74,714	12,013,495	2,409,521	1,263,764	1,128,668	1,278,819
Kentucky.....	e 62,259	e 1,217,337	e 820,844	639,016	468,774	472,458
Louisiana.....	.....	8,910,416	5,000,221	3,059,531	6,841,395	10,720,420
New York.....	.....	1,117,582	1,212,300	1,134,897	1,053,838	952,515
Ohio.....	22,362,730	16,346,660	12,207,448	10,632,793	9,916,370	8,817,112
Oklahoma.....	6,472	(g)	43,524,128	47,859,218	52,028,718	56,069,637
Pennsylvania.....	.....	10,437,195	9,999,306	9,299,403	8,794,662	8,248,158
Texas.....	836,039	28,136,189	12,322,696	9,534,467	8,899,266	9,526,474
West Virginia.....	16,195,675	11,578,110	9,095,296	10,745,092	11,753,071	9,795,464

a Includes production of Indiana. b Includes production of Minnesota. c Includes production of entire Mississippi Valley. d Includes production of Utah. e Includes production of Tennessee. f Includes production of Oklahoma. g Included with figures for Kansas. A Includes production for North Carolina and South Carolina. i Includes production of West Virginia.

XX. THE MINERAL INDUSTRIES

VII. IMPORTS AND EXPORTS OF MINERAL PRODUCTS, 1900-12

(U. S. Statistical Abstract)

(000 omitted.)

	1900	1905	1907	1909	1910	1911	1912
IMPORTS:							
Antimony (ore and metal).....	\$341	\$363	\$2,132	\$815	\$551	\$541	\$603
Asbestos, unmanufactured.....	293	706	1,014	1,021	1,122	1,318	1,378
Manufactures of.....	15	53	150	220	269	293	336
Bismuth.....	225	305	262	274	316	321	.....
Cement.....	.....	1,276	3,669	712	602	324	168
Clays or earths.....	1,035	1,272	1,954	1,777	2,076	2,107	2,036
Coal.....	4,476	3,906	4,263	3,518	4,469	5,018	3,722
Coke.....	232	835	563	777	521	558	268
Copper (including ore and matte).....	3,032	4,802	8,296	8,697	9,272	7,659	9,363
Manufactures of.....	12,457	19,942	39,428	20,378	30,938	32,013	35,843
Emery and other abrasives.....	201	309	457	285	473	502	.....
Phosphates, crude.....	504	750	165	137	152	.....	.....
Gold.....	44,573	53,648	114,510	44,003	43,339	73,607	48,936
Iron and Steel:							
Iron ore.....	1,497	1,670	3,360	2,714	6,763	6,691	6,110
Pig iron, including ferrosilicon.....	2,109	2,989	15,654	3,509	6,289	6,056	3,679
Scrap iron and steel.....	562	174	290	61	1,507	304	151
Manufactures of.....	17,806	20,346	24,642	18,869	33,213	29,623	22,720
Lead, ore and base bullion.....	3,128	3,616	3,352	4,436	3,643	4,038	3,854
Pig and manufactured.....	27	296	1,033	234	279	167	109
Lime.....	63	87	95	56	79	56	.....
Manganese, ore and oxide of.....	2,693	1,661	1,672	1,243	1,592	1,453	1,292
Marble and manufactures of.....	812	1,308	1,589	1,230	1,552	1,477	1,384
Nickel ore and matte.....	1,070	1,205	1,897	2,544	3,618	3,946	4,565
Oils, mineral.....	220	494	1,305	329	610	2,143	3,654
Plaster rock.....	242	361	479	356	426	422	.....
Platinum.....	1,832	1,959	3,419	1,882	3,345	3,983	5,013
Salt.....	625	496	471	428	395	401	364
Silver.....	35,256	27,484	42,946	43,954	45,217	45,937	47,060
Sulphur.....	1,224	1,694	2,492	2,462	2,626	3,108	3,919
Talc.....	1	47	100	93	115	83	.....
Tin.....	19,104	23,378	38,117	26,007	30,869	37,935	46,214
Zinc, ore.....	.....	229	1,442	1,027	1,139	937	727
Manufactures of.....	171	60	98	219	870	282	719
EXPORTS:							
Aluminum and manufactures of.....	244	175	442	341	666	1,330	1,144
Asbestos and manufactures of.....	93	234	274	268	312	404	502
Asphaltum and manufactures of.....	121	291	374	425	702	868	1,170
Cement.....	163	1,484	1,180	1,143	2,292	4,349	5,083
Coal.....	19,502	29,158	34,727	37,316	40,512	45,013	52,648
Coke.....	1,233	2,228	3,013	2,752	3,077	3,300	2,938
Copper, ore and matte.....	1,009	1,338	1,838	1,417	1,304	1,095	3,123
Manufactures of.....	57,852	86,225	94,762	85,290	88,004	103,813	113,958
Emery and corundum.....	170	347	609	592	872	1,347	1,654
Gold.....	48,266	92,594	51,399	91,531	118,563	22,509	57,328
Graphite.....	21	43	266	93	302	407	452
Iron and Steel:							
Iron ore.....	79	581	674	1,264	1,637	2,496	2,806
Pig iron.....	.....	828	1,634	816	1,353	2,475	2,658
Scrap iron and steel.....	749	270	345	407	281	794	1,196
Manufactures of.....	118,039	133,630	179,550	143,727	177,497	227,454	264,299
Lead, manufactures of.....	205	499	599	581	481	729	626
Lime.....	85	64	96	81	109	117	.....
Marble and Stone:							
Unmanufactured.....	120	227	451	239	413	607	.....
Manufactures of.....	1,556	1,055	981	956	1,034	1,082	.....
Nickel, nickel oxide and matte.....	1,219	3,196	3,218	3,395	4,532	6,004	8,749
Manufactures of.....	.....	97	248	12	80	252	.....
Oils, mineral.....	75,611	79,793	84,855	105,999	99,090	98,115	112,472
Phosphate rock.....	6,376	6,886	7,363	8,105	7,454	9,068	8,982
Plaster of Paris.....	.....	16	16	14	6	16	.....
Platinum.....	61	10	51	14	43	105	.....
Quicksilver.....	556	653	243	153	256	20	14
Salt.....	55	190	235	237	286	329	383
Silver.....	50,712	48,848	56,739	55,682	55,286	64,749	64,890
Tin, scrap.....	44	29	.....	104	64	46	.....
Manufactures of.....	387	721	1,181	772	879	999	1,234
Zinc, ore and dross.....	1,205	1,765	1,615	1,099	881	949	955
Manufactures of.....	1,669	1,319	528	371	196	829	1,350

XXI. MANUFACTURES

WILLIAM M. STEUART

General Condition During the Year.—There was an increase in business confidence apparent at the opening of the year, and trade conditions gradually improved, becoming favorable for an increased output in manufactures. The 'longshoremen's strike in England (see IV, *Foreign Affairs*), labor troubles in the textile and coal-mining industries, both in England and the United States (see IV, *Foreign Affairs*, and XVII, *Labor*), and the exceedingly cold weather retarded development, but the general tendency during the first half of the year was toward an increase in production. The increase in business confidence became more pronounced as the year advanced. The need of replenishing depleted stocks, and of supplying the pressing wants of a growing population stimulated manufactures and caused an increase in production, notwithstanding the political uncertainties that were incident to a presidential election. The basic industries, iron and steel, textiles, clothing, and food products, with but few exceptions, showed steady increases, especially during the last half of the year. The crops for all the staple products were unusually large, and by the close of the year the principal industries were working practically to their full capacity. Commercial reports indicated that the country was entering upon a period of unusual industrial activity. The production of iron, copper, and other metals was on a record-making basis, the output for the year being one of the largest, and there seemed to be a general spreading of activity in all branches of manufactures. The consensus of opinion among manufacturers seemed to be that the country had grown so enormously in population, consumptive ca-

capacity, and standard of requirements that the necessity of administering to it could not be ignored; that the increased production would be consumed irrespective of political and international disturbances. Accompanying this general and almost constant increase in industrial activity there were, during the first nine months of the year, a larger number of business failures (11,816, with liabilities amounting to \$153,544,360) than during the corresponding period of 1911, when the failures numbered 9,944 and the liabilities amounted to \$138,865,620. There were 2,839 failures of manufacturing concerns, with liabilities amounting to \$65,693,312, as compared with 2,544 with \$61,333,505 liabilities in 1911. There was a diminution in the number and magnitude of the failures as the year advanced. The statistics of failures do not harmonize with the unmistakable improvement in business conditions; they can only be attributed to passing conditions, and are not significant of the future. (See also XIII, *Economic Conditions and the Conduct of Business*.)

Magnitude of the Manufacturing Industry.—Under the existing law the federal census of manufactures is taken every fifth year, and there are no statistics to show the magnitude of the operations during the years intervening between the census years. The totals for 1912 given in the table on the next page are conservative estimates based on the increases from the census of 1904 to that of 1909 (see *AMERICAN YEAR BOOK*, 1911, p. 525).

The figures indicate that the labor and various manufacturing processes expended upon the raw material added or created a value amounting to \$9,-870,000,000 during the year 1912. The

XXI. MANUFACTURES

GENERAL STATISTICS OF MANUFACTURES

	NUMBER OR AMOUNT		
	1912 (estimated)	1909	1904
Number of establishments.....	299,878	268,491	216,180
Persons engaged in manufactures.....	8,557,558	7,678,578	6,213,612
Proprietors and firm members.....	301,820	273,285	225,673
Salaried employees.....	952,694	790,267	519,556
Wage earners (average number)...	7,303,044	6,615,046	5,468,383
Primary horsepower.....	21,787,977	18,675,376	13,487,707
Capital.....	\$21,879,883,000	\$18,428,270,000	\$12,675,581,000
Expenses.....	21,643,588,000	18,454,090,000	13,138,260,000
Services.....	5,074,050,000	4,365,613,000	3,184,884,000
Salaries.....	1,157,056,000	938,575,000	574,439,000
Wages.....	3,916,994,000	3,427,038,000	2,610,445,000
Materials.....	14,328,341,000	12,142,791,000	8,500,208,000
Miscellaneous.....	2,241,197,000	1,945,686,000	1,453,168,000
Value of products.....	24,198,941,000	20,672,052,000	14,793,903,000
Value added by manufacture (value of products less cost of materials).....	9,870,600,000	8,529,261,000	6,293,695,000

figures for each industrial census taken by the federal Government since 1850 show an increase over the amounts reported for the preceding census. This increase is of course due in part to the fact that the census years have been periods of unusual activity or of normal conditions. No census has been taken during a period of great industrial depression, and therefore the totals do not reflect the actual conditions that existed during the entire period since 1850. Under normal conditions the manufactures have constantly increased, and during certain periods have increased very rapidly. These increases have added greatly to the annual production, and the total for 1912 is almost 24 times as great as the total for 1850, when the products were valued at \$1,019,107,000.

Manufactures in Northern, Southern, and Western States.—While manufactures of considerable magnitude exist in all of the states, their development in some sections has been more rapid than in others; in other sections they have the advantage of an early start. Thus the northern states in 1909 contained 72.2 per cent. of the establishments that produced 81.4 per cent. of the products for the United States; the corresponding percentages for the southern states were 20.8 and 12.8, respectively, and for the western states 7.0 and 5.8 per cent. The New England states were the first to develop their manufactures, but since the Civil War industries have increased rapidly in

the southern and north-central states until now the theoretical center of manufactures for the entire country is in the north-central portion of Ohio.

The proportion of manufactures in the northern states has been constantly decreasing, while the proportion in the southern and western states has increased. The percentage of the total wage earners in the South has increased from 15.9 to 17.1, while the percentage in the North has decreased from 80.5 to 78.6. The manufactures developing in the South are principally of the heavy staple character, such as lumber, cotton, cottonseed products, fertilizers, and iron and steel. The multitude of lighter industries with a great diversity of products are developing most rapidly in the northern and older manufacturing states. The details are given in the table on the following page.

Localization of Manufactures.—Some industries have been fostered in certain localities, while others have localized because of the peculiar advantages of the localities for their development. Thus in the value of products the artificial flowers and feathers made in New York City form 88 per cent. of the total for the United States, the lapidary work done in the same city forms 94.2 per cent., and the paper patterns made there 82.7 per cent. of the totals for the entire country, while its hair-working establishments reported 69.7 per cent. of the total products. All

XXI. MANUFACTURES

GEOGRAPHICAL DISTRIBUTION OF MANUFACTURES

		Number of Establish- ments	Wage Earners (average number)	Capital	Value of Products	Added by Manu- facture
Expressed in thousands						
United States.....	1909	268,491	6,615,046	\$18,428,270	\$30,672,052	\$8,529,261
	1904	216,180	5,468,383	12,675,681	14,793,903	6,293,695
	1899	207,514	4,712,763	8,975,258	11,406,927	4,831,076
Northern States.....	1909	193,850	5,197,138	14,728,326	16,827,427	6,915,305
	1904	163,224	4,364,206	10,866,703	12,134,079	5,148,263
	1899	159,668	3,796,120	7,591,819	9,561,092	4,050,509
Southern States.....	1909	55,908	1,129,307	2,502,490	2,637,117	1,128,818
	1904	38,154	887,310	1,664,687	1,853,596	804,506
	1899	36,376	748,940	1,011,311	1,289,200	563,498
Western States.....	1909	18,833	288,601	1,197,454	1,207,508	485,138
	1904	14,802	216,867	644,192	806,228	340,926
	1899	11,475	167,703	372,126	556,635	217,069
Per Cent. of Total :						
Northern States.....	1909	72.2	78.6	79.9	81.4	81.1
	1904	75.5	79.8	81.8	82.0	81.8
	1899	76.9	80.5	84.6	83.8	83.9
Southern States.....	1909	20.8	17.1	13.6	12.8	13.2
	1904	17.6	16.2	13.1	12.5	12.8
	1899	17.5	15.9	11.3	11.3	11.7
Western States.....	1909	7.0	4.4	6.5	5.8	5.7
	1904	6.8	4.0	5.1	5.4	5.4
	1899	5.5	3.6	4.1	4.9	4.5

four of these industries would naturally develop most rapidly in the financial center of the country, where luxuries and fashion are indulged in to the greatest extent. The clothing industries are also peculiar to the large cities; in the manufacture of men's clothing New York City produced 38.4 per cent. and Chicago 14.7 per cent. of the total for the United States. When the automobile industry was in its incipency the city of Detroit held out special inducements for its establishment there, and there are now manufactured in that city about one-fourth of the automobiles and accessories made in the country. The adjoining table illustrates the localization of manufactures in 1909 in a number of leading industries.

The manufacture of collars and cuffs, as a factory industry, was inaugurated in Troy, N. Y., and, notwithstanding its growth in other cities, developed so rapidly that the city even now produces more than three-fourths of the product of the United States. The slaughtering industry had the advantage of an early start in Chicago, where it was quickly organized on a factory basis. At one time the city produced a large proportion of the meat products of the country, but the advantages possessed by cities nearer the centers of the grazing districts are so great that the relative importance of Chicago

has decreased, though the city now manufactures about a fourth of the

Industry	City	Per Cent. of Total for United States.
Agricultural implements.....	Moline, Ill. Racine, Wis.	7.9 4.9
Artificial flowers and feathers....	New York, N. Y.	88.0
Automobiles.....	Detroit, Mich. Cleveland, Ohio	23.9 8.6
Boots and shoes..	Lynn, Mass. Brockton, Mass.	9.1 7.7
Brass and bronze.	St. Louis, Mo.	6.6
Men's clothing...	Waterbury, Conn. New York, N. Y.	21.0 38.4
Collars and cuffs.	Chicago, Ill.	14.7
Corsets.....	Troy, N. Y.	79.2
Cotton goods....	Bridgeport, Conn.	20.7
Flour mills.....	Fall River, Mass. New Bedford, Mass.	7.7 6.8
Fur-felt hats....	Minneapolis, Minn.	8.9
Fur goods.....	Philadelphia, Pa.	21.7
Hairwork.....	Danbury, Conn.	14.9
Hosiery and knit goods.....	New York, N. Y.	71.3
Iron and steel....	New York, N. Y.	69.7
Jewelry.....	Philadelphia, Pa. Pittsburgh, Pa.	12.0 8.3
Lapidary work..	Providence, R. I.	25.1
Leather gloves and mittens.....	New York, N. Y.	23.9
Millinery and lace	New York, N. Y.	94.2
Paper patterns...	Gloversville, N. Y.	37.5
Plated ware.....	Johnstown, N. Y.	13.8
Rice, cleaning and polishing.....	New York, N. Y.	59.7
Silk and silk goods	New York, N. Y.	82.7
Slaughtering... meat packing..	Meriden, Conn. New Orleans, La.	36.0 22.9
Women's clothing	Paterson, N. J. Chicago, Ill.	20.5 23.7
	Kansas City, Kan.	10.8
	New York, N. Y.	69.3

XXI. MANUFACTURES

total production. The manufacture of brass, bronze, and plated ware is peculiar to Connecticut, Waterbury now producing about 21 per cent. of the brass and bronze, and Meriden 36 per cent. of the plated ware.

Leading Industries in Principal Cities.—Some manufactures are peculiar to the rural districts, but all or practically all classes exist, at least to some extent, in the cities. The following statement shows the rank, according to value of product, of a few of the most important industries in each of the seven principal cities:

NEW YORK:

Clothing, women's
Clothing, men's, including shirts
Printing and publishing
Slaughtering and meat packing
Sugar refining
Foundries and machine shops

CHICAGO:

Slaughtering and meat packing
Foundries and machine shops
Clothing, men's, including shirts
Printing and publishing
Iron and steel
Lumber products

PHILADELPHIA:

Woolen goods
Printing and publishing
Sugar refining
Foundries and machine shops
Clothing, women's
Clothing, men's, including shirts

ST. LOUIS:

Boots and shoes
Tobacco
Slaughtering and meat packing
Malt liquors
Printing and publishing
Foundries and machine shops

CLEVELAND:

Iron and steel
Foundries and machine shops
Automobiles
Slaughtering and meat packing
Clothing, women's
Iron and steel, blast furnaces

DETROIT:

Automobiles
Foundries and machine shops
Slaughtering and meat packing
Tobacco
Brass and bronze
Patent medicines

PITTSBURGH:

Iron and steel, rolling mills
Foundries and machine shops
Iron and steel, blast furnaces
Slaughtering and meat packing
Printing and publishing
Railroad repair shops

A different industry holds first place in each of these cities, with the exception of Cleveland and Pittsburgh, in each of which the manufacture of iron and steel is of the greatest value.

The manufacture of iron and steel or its remanufacture in foundries and machine shops are among the most important industries in all seven cities.

Slaughtering and meat packing is among the principal industries in six of these cities, and printing and publishing in five of them. The other industries are not so important in such a number of places, and depend more especially upon local conditions for their development.

The rank of the principal cities in each of the six leading industries according to value of product is shown in the following statement:

Slaughtering and Meat Packing	Foundries and Machine Shops	Lumber and Timber Products	Steel Works and Rolling Mills	Flour Mills	Printing and Publishing
Chicago	Chicago	Chicago	Pittsburgh	Minneapolis	New York
Kansas City	New York	New York	Youngstown, O.	Buffalo	Chicago
New York	Philadelphia	Minneapolis	Chicago	Milwaukee	Philadelphia
South Omaha	Cleveland	Portland, Ore.	Cleveland	Chicago	Boston
Indianapolis	Pittsburgh	Seattle	McKeesport, Pa.	Louisville	St. Louis
St. Louis	Buffalo	Philadelphia	Johnstown, Pa.	Indianapolis	San Francisco

While the largest cities necessarily rank high in most of the industries, for some branches of manufacture the smaller cities outrank the more populous places. Minneapolis, Minn., ranks first in the manufacture of flour; Youngstown, Ohio, second in steel works and rolling mills; and Kansas City, Kan., second in slaugh-

tering and meat packing. Others of the smaller cities in population which have a high rank in these industries are McKeesport and Johnstown, Pa., in iron and steel; South Omaha, Neb., in slaughtering and meat packing; and Portland, Ore., and Seattle, Wash., in the manufacture of lumber and timber products.

XXI. MANUFACTURES

STATISTICS OF MANUFACTURES BY BASIC GROUPS

Group	Year	Number of Establishments	Capital	Wage Earners (average number)	Value of Products
United States.....	1909	268,491	\$18,428,269,706	6,615,046	\$20,672,051,870
	1904	216,180	12,675,580,874	5,468,383	14,793,902,563
	1899	207,514	8,975,256,496	4,712,763	11,406,926,701
Food and kindred products...	1909	55,364	1,696,754,345	411,575	3,937,617,891
	1904	45,857	1,169,872,985	354,046	2,845,555,772
	1899	41,247	909,395,526	301,868	2,199,203,442
Textiles.....	1909	21,695	2,483,932,835	1,437,258	3,054,708,084
	1904	17,022	1,741,500,857	1,155,613	2,144,604,719
	1899	17,640	1,340,107,570	1,021,869	1,627,889,977
Iron and steel and their products.....	1909	17,289	3,573,304,015	1,025,044	3,163,126,293
	1904	14,430	2,347,444,114	867,390	2,197,773,117
	1899	14,080	1,544,773,243	744,069	1,818,036,771
Lumber and its remanufactures.....	1909	48,533	1,563,659,091	907,514	1,582,522,263
	1904	32,493	1,004,061,953	729,686	1,214,476,055
	1899	34,947	727,033,275	669,043	1,004,716,682
Leather and its finished products.....	1909	5,728	659,231,312	309,766	992,713,322
	1904	5,318	451,796,131	284,459	724,391,050
	1899	5,625	334,733,718	248,626	582,047,900
Paper and printing.....	1909	34,828	1,133,617,756	415,990	1,179,285,247
	1904	30,803	803,662,460	351,640	859,814,263
	1899	26,627	559,400,425	298,744	607,957,231
Liquors and beverages.....	1909	7,347	874,107,693	77,827	674,311,051
	1904	6,879	659,538,570	68,338	501,253,855
	1899	5,740	515,160,244	55,120	382,898,381
Chemicals and allied products.	1909	11,745	2,015,103,561	237,988	1,430,901,954
	1904	9,548	1,497,614,815	208,345	1,023,790,759
	1899	8,687	1,127,313,535	179,539	726,105,558
Clay, glass, and stone products.	1909	16,168	857,759,719	342,827	531,736,831
	1904	10,773	553,784,982	285,346	391,147,449
	1899	11,524	335,351,320	231,716	270,650,143
Metal and metal products, other than iron and steel....	1909	8,750	865,918,595	248,785	1,238,251,401
	1904	5,843	570,573,139	197,692	894,282,432
	1899	4,996	371,128,856	160,422	688,927,152
Tobacco manufactures.....	1909	15,822	245,660,484	166,810	416,695,104
	1904	16,827	323,982,501	159,406	331,111,181
	1899	14,959	111,517,318	132,526	263,713,173
Vehicles for land transportation.....	1909	6,562	521,456,520	202,719	561,763,289
	1904	6,058	287,847,438	136,625	320,623,822
	1899	7,338	263,873,364	133,663	277,485,366
Shipbuilding, including boat building.....	1909	1,353	126,118,489	40,506	73,360,315
	1904	1,097	121,623,700	50,754	82,769,239
	1899	1,107	77,341,001	46,747	74,632,277
Railroad repair shops.....	1909	1,686	277,216,183	304,592	437,563,288
	1904	1,226	159,792,332	247,922	323,212,210
	1899	1,400	130,254,981	180,620	227,484,469
Miscellaneous industries.....	1909	15,621	1,534,429,108	485,845	1,397,495,537
	1904	12,506	982,454,897	391,121	939,096,640
	1899	11,597	627,872,120	308,191	656,279,079

Basic Groups of Industry.—Classification of manufactures is generally based on the character of the finished products, but some other method is necessary in order to present at a glance the relative importance of the broad groups of industry. In the statement opposite the statistics for each establishment have been assigned to one of 15 groups of industry. This grouping is governed by the similarity of the material entering into the manufacture, but the use to which the products are put sometimes forms an important factor.

The group of food and kindred products includes all kinds of products, except liquors and beverages, that are intended for human consumption. Measured by the value of products, it is the most important industry in the United States. It may be divided into two classes, the first comprising the animal and fish products, valued at \$1,700,128,745, and the second the vegetable products, valued at \$2,237,489,146, in 1909.

Iron and steel and their products, which is the second most important group of industries, may also be divided into three general groups: (1) the production of pig iron, steel ingots and first products, which were valued at \$1,377,151,817; (2) the manufactures nearest the raw material, which were valued at \$220,332,661; (3) the manufacture of the more highly elaborated articles, valued at \$1,565,641,815, in 1909.

Textiles and their remanufactures form the third most important group. This group can be divided into three classes, those representing establishments engaged in one or more of the processes involved in the manufacture of the fibrous material into the fabric, for which the products amounted to \$1,738,487,723; those which manufactured articles from textile fabrics for personal wear, valued at \$1,175,703,230; and those manufacturing articles from fabrics not for personal wear, valued at \$140,517,131, in 1909.

Lumber and its remanufacture is another general group of industries for which the annual production amounts to more than a billion dollars. This group may also be divided into three classes: (1) lumber

and timber products, valued at \$1,156,128,747; (2) the remanufactures of lumber, valued at \$411,422,016; and (3) products of chemical change, charcoal, etc., valued at \$14,971,500, in 1909.

Large Establishments.—The formation of large establishments and the bringing together under the same ownership of plants formerly operated as independent plants has been a feature of the development of manufactures during the past 25 years. While this has been characteristic of comparatively few lines of manufacture, the industries affected are among the most important, and the condition has become so pronounced that it can be detected in the grand total for the manufactures shown by the last census. Only 1.1 per cent. of the establishments reported at that census had an annual product valued at \$1,000,000 and over, but this small number gave employment to 30.5 per cent. of all the wage earners, and their products formed 43.8 per cent. of the total products for all establishments.

Both the number and percentage of establishments manufacturing products valued at \$1,000,000 and over increased from 1904 to 1909 in all sections of the country, except the East South Central group of states, where the figures remained stationary, and the Mountain group, which showed a slight loss. The New England group of states in 1909 furnished the largest percentage of the total number of establishments manufacturing over a million dollars' worth of products, followed by the Middle Atlantic and the East North Central groups. The West North Central and the Mountain states, because of the smelting and refining industries, ranked fourth. The West and East South Central states reported the smallest proportion, their percentage being less than one-half of one per cent.

The state in which establishments manufacturing products to the value of \$1,000,000 or more represented the largest proportion of the total number of establishments in 1909 was Rhode Island, with 3.5 per cent., followed by Arizona and Massachusetts, in the order named. The proportion

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in New York, the leading manufacturing state, was comparatively low, 1 per cent. There are several states in which such establishments represented only a small fraction of 1 per cent. of the total number.

The value of products of the large establishments, those with \$100,000 product or more, located in New England furnished a greater proportion of the total value than those of any other group, and those of the East North Central states were second. The Mountain group was the only one in which the proportion furnished by these establishments decreased between 1904 and 1909; the greatest percentage of gain, from 8.6 to 17.0, was made in the West South Central states.

In most of the states the large establishments contributed a very considerable proportion of the entire value of manufactured products. The state in which this proportion was the highest in 1909 is Arizona, with 84.1 per cent., followed by Nebraska, Montana, Kansas, New Jersey, Illinois, Utah, and Pennsylvania, in each of which the products of establishments of this class represented more than one-half of the total value. The predominance of the smelting and refining of copper and lead in the Mountain states, of the slaughtering and meat-packing industry in Kansas and Nebraska, of the slaughtering and the

iron and steel industries in Illinois, of the iron and steel industry in Pennsylvania, and of the smelting and refining of copper and the refining of petroleum in New Jersey, serves, in a large measure, to explain these high percentages.

The most pronounced concentration is shown for the smelting and refining of lead, for which 28 establishments were reported. In 21 of these establishments the products were valued at over a million dollars each, their total forming 99.2 per cent. of the total for the industry. The concentration is almost as great in the manufacture of lead pencils, where the value of the products of four establishments formed 94.4 per cent. of the total for the 11 establishments in the industry, and in phonographs and graphophones, where four out of the 18 establishments reported 93.5 per cent. of the total value of products.

Size of Establishments as Determined by the Number of Wage Earners.—In 1909 there were only 540 establishments in which over 1,000 wage earners were employed on the average during the year, but this small number that formed only 0.2 per cent. of the total in the country gave employment to 1,013,274, or 15.3 per cent. of the wage earners reported for all establishments. Details are given in the following table:

WAGE EARNERS

Wage Earners Employed	Number of Establishments	Average Number of Wage Earners	Per Cent. of Total	
			Establishments	Wage Earners
Total, United States.....	268,491	6,615,046	100.0	100.0
None.....	27,712	.....	10.3	.....
1 to 5.....	136,289	311,704	50.8	4.7
6 to 20.....	57,198	640,793	21.3	9.7
21 to 50.....	23,544	764,408	8.8	11.6
51 to 100.....	10,964	782,298	4.1	11.8
101 to 250.....	8,116	1,258,639	3.0	19.0
251 to 500.....	2,905	1,006,457	1.1	15.2
501 to 1,000.....	1,223	837,473	0.5	12.7
Over 1,000.....	540	1,013,274	0.2	15.3

The small establishments, those employing no wage earners or less than 20, still greatly predominate in number. At the last census there were 221,199 of these establishments, but they gave employment to only 14.4 per cent. of the wage earners.

Following the classification of manu-

factures used at the federal census of 1909, there were 14 industries in the United States each of which reported more than 100,000 wage earners as employed during the year. Of these industries the greatest concentration in large establishments, 97.5 per cent., is shown for the steel-

works and rolling-mill branch of the iron and steel industry. The greatest concentration of the large establishments, those having more than 100 wage earners, however, irrespective of other considerations, appears in the manufacture of rubber boots and shoes, where, with the exception of one establishment employing seven wage earners, all of the 22 establishments reported more than 100 wage earners and for sugar refining, where 99.9 per cent., or practically all the wage earners, were employed in such establishments. The next most important industries in this respect are the manufactures of locomotives, with 99.2, and of sewing machines, with 97.2, the smelting and refining of copper and lead, with 97.1 and 97 per cent., respectively, followed by the refining of lard, with 96.7, and wire manufacture, with 96 per cent. of the wage earners in such establishments. Ten other industries reported over 90 per cent., and 26 above 80 per cent., but less than 90 per cent., and 24 others above 70 per cent., but less than 80 per cent., of the total wage earners employed in establishments of this size. On the other hand, only one of the 2,004 establishments engaged in the manufacture of ice employed more than 100 wage earners.

In 31 of the most important industries, those employing 10,000 wage earners, more than one-half of the wage earners were reported for the establishments having not more than 100 wage earners, the most conspicuous of these being in the manufacture of ice, 98.6 per cent.; mineral and soda waters, 97.8 per cent.; cottonseed oil, 96.5 per cent.; and butter, cheese, and condensed milk, with 94.9 per cent. Several of the industries contained a considerable number of small establishments which reported no wage earners, noticeably large proportions being reported for tobacco manufactures, where the proportion of such establishments was 31.6 per cent.; in the manufacture of patent medicines, 28.9 per cent.; in printing and publishing, 22.1 per cent.; and in the manufacture of bread and bakery products, 15.2 per cent.

In 31 of the 48 states, the establishments reporting more than 100 wage earners each gave employment

to more than 50 per cent. of the total number employed in all establishments. The largest proportion, 79 per cent., is reported for Connecticut, with Rhode Island, New Hampshire, Massachusetts, and South Carolina following in the order named, each with a proportion of 75 per cent. or over. As a rule, the highest proportion for establishments of this class is shown for the states in which manufactures are well established, though more than 70 per cent. is shown for the newly developed states of Arizona and Wyoming. This condition was due primarily to the few large repair shops of steam railroads and plants of the lumber and timber companies in these states, and, in addition, the large copper smelters in Arizona. South Dakota had only two and North Dakota only three establishments which employed more than 100 wage earners each, and these formed 8.9 and 13.4 per cent., respectively, of the total number of wage earners in each state. The centralization of large plants within certain states is shown by the fact that 7,630 establishments, or nearly 60 per cent. of the entire number in the United States that employed more than 100 wage earners each, were located in the following seven states: New York, Pennsylvania, Massachusetts, Ohio, Illinois, New Jersey, and Michigan. These establishments employed 2,553,474 wage earners, or 38.6 per cent. of the entire number reported for the United States. The largest proportion of small establishments was reported from the District of Columbia and the states of Idaho, Iowa, Nebraska, Nevada, North Dakota, South Dakota, and Oklahoma, where less than 2 per cent. of the establishments employed over 100 wage earners.

Prevailing Hours of Labor.—For the great majority of wage earners employed in the manufacturing industries of the country the prevailing hours of labor range from 54 to 60 a week, only 15.2 per cent. of the total number being employed in establishments where the hours per week are less than 54, and but 8.7 per cent. in establishments where more than 60 hours a week prevail. These percentages and the figures

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given in the accompanying statement are obtained from the reports for the census of 1909, and are based upon the prevailing practice followed during the year in each establishment. Occasional variations in hours in an establishment are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. All the wage earners of each establishment are counted in the class within which the establishment itself falls.

HOURS OF LABOR

Prevailing Hours of Labor per Week	Average Number of Wage Earners	Per Cent. of Total
Total.....	6,615,046	100.0
48 and under.....	523,652	7.9
Between 48 and 54.....	481,157	7.3
54.....	1,019,438	15.4
Between 54 and 60.....	1,999,307	30.2
60.....	2,017,280	30.5
Between 60 and 72.....	344,011	5.2
72.....	116,083	1.8
Over 72.....	114,118	1.7

The greatest proportion of wage earners were employed in establishments operating the maximum time in the manufacture of ice, gas, cement, and in cottonseed-oil mills and blast furnaces. The largest proportion of wage earners in establishments working more than 60 hours, 96.6 per cent., is shown for blast furnaces, followed by 89.8 per cent. for the cottonseed-oil mills; 77.8 per cent.

for the manufacture of ice; 72.9 per cent. for illuminating gas; and 70.9 per cent. for cement. A considerable proportion of the wage earners were also employed in establishments working the maximum time in the manufacture of beet sugar, butter and cheese, glucose and starch, malt, paper and wood pulp, sugar and molasses, sugar refining, sulphuric and nitric acid, the smelting and refining of zinc, rice cleaning, wood distillation, and iron and steel rolling mills, as well as in flour and grist mills. In some of these industries the active season of production is short, depending upon the supply of raw material, and in most of them the machinery is expensive and the processes are of such a character that continuous, or almost continuous, operation is essential to economic production.

As shown by the following statement, longer hours of employment are more prevalent in the southern and western states than in the northern. In the southern states 69.7 per cent. of the wage earners were employed in establishments where 60 or more hours per week were the prevailing hours of work, and in the western states 50.9 per cent., while in the northern states only 32.0 per cent. were employed in such establishments. On the other hand, the largest proportion, 14.7 per cent., for the shortest hours of employment are shown for the western states.

HOURS OF LABOR BY GEOGRAPHICAL DIVISIONS

Prevailing Hours of Labor per Week	United States	Northern States	Southern States	Western States	Per Cent. Distribution		
					Northern States	Southern States	Western States
Total.....	6,615,046	5,197,138	1,129,307	288,601	78.6	17.1	4.4
48 hours and under.....	523,652	400,315	81,047	42,290	76.5	15.5	8.1
Per cent. of total.....	7.9	7.7	7.2	14.7	.....	.....	.....
Between 48 and 54 hours.....	481,157	420,359	45,313	15,485	87.4	9.4	3.2
Per cent. of total.....	7.3	8.1	4.0	5.4	.....	.....	.....
54 hours.....	1,019,438	848,950	112,061	58,427	83.3	11.0	5.7
Per cent. of total.....	15.4	16.3	9.9	20.2	.....	.....	.....
Between 54 and 60 hours.....	1,999,307	1,869,079	104,960	25,268	93.5	5.2	1.3
Per cent. of total.....	30.2	36.0	9.3	8.8	.....	.....	.....
60 hours.....	2,017,280	1,348,886	548,660	119,734	66.9	27.2	5.9
Per cent. of total.....	30.5	26.0	48.6	41.5	.....	.....	.....
Between 60 and 72 hours.....	344,011	140,516	184,909	18,586	40.8	53.8	5.4
Per cent. of total.....	5.2	2.7	16.4	6.4	.....	.....	.....
72 hours.....	116,083	82,490	29,986	3,607	71.1	25.8	3.1
Per cent. of total.....	1.8	1.6	2.7	1.2	.....	.....	.....
Over 72 hours.....	114,118	86,543	22,371	5,204	75.8	19.6	4.6
Per cent. of total.....	1.7	1.7	2.0	1.8	.....	.....	.....

STATISTICS OF MANUFACTURES IN CITIES

Year	Aggregate	CITIES AND TOWNS HAVING A POPULATION OF 10,000 AND OVER								Districts Outside of Cities and Towns Having a Population 10,000 and over	
		Total		10,000 to 25,000		25,000 to 100,000		100,000 and over			
		Number or Amount	Per Cent. Dis- tribu- tion	Number or Amount	Per Cent. Dis- tribu- tion	Number or Amount	Per Cent. Dis- tribu- tion	Number or Amount	Per Cent. Dis- tribu- tion		
1910	.....	593	.....	365	.....	178	.....	50	.....	.....
1900	.....	436	.....	277	.....	123	.....	27	.....	.....
1910	91,972,266	34,002,692	37.0	5,495,594	6.0	8,204,904	8.9	20,302,158	22.1	67,909,574	63.0
1900	75,994,575	24,032,670	31.7	4,287,118	5.7	5,547,205	7.3	14,598,347	18.7	51,041,905	68.4
1909	265,491	135,772	50.6	18,936	7.1	27,061	10.1	87,776	33.4	132,719	49.4
1899	207,514	102,918	49.6	15,463	7.5	30,147	9.7	67,808	32.4	104,596	50.4
1909	6,715,940	4,316,642	65.3	678,467	10.3	1,126,353	17.0	2,611,822	39.0	2,298,494	34.7
1909	5,203,216	3,023,216	58.1	523,216	10.4	1,033,216	19.7	1,463,216	27.5	1,183,216	22.6
1909	\$20,672,051,870	\$14,264,878,807	69.0	\$1,946,703,216	9.4	\$3,583,403,572	16.3	\$8,775,772,018	42.3	\$6,407,173,063	31.1
1899	11,405,928,701	7,864,504,177	68.9	1,052,639,594	9.2	1,431,652,146	16.8	3,766,686,843	43.6	2,526,265,707	29.6
1899	8,629,260,992	6,103,005,286	70.4	801,766,297	9.3	1,173,117,708	16.0	2,146,680,866	44.4	1,453,697,283	30.1
1899	4,831,075,210	3,377,477,927	69.9	458,679,363	9.5	773,117,708	16.0	1,146,680,866	44.4	1,453,697,283	30.1

Manufactures in Cities.—The cities with a population of 10,000 and over contained a little over one-half of the manufacturing establishments, but they gave employment to about two-thirds of the wage earners, and their product formed more than two-thirds of the total value of products for the entire country. The accompanying statistics indicate that there has been a slight increase in the relative importance of the manufactures in cities, but there is a tendency in the opposite direction due to the location of establishments in the suburbs of the large cities and in the smaller municipalities.

The manufactures in a large number of the cities are much more extensive than those for a number of states. For example, in value of products New York City outranks 47 of the states, Chicago outranks 44 states, Philadelphia 43, and St. Louis 36. The value of products for Springfield, Mass., which has a population of only 88,926, is greater than that of seven different states.

The rank of the cities with respect to manufactures is in many cases decidedly different from their rank in population. Thus Boston ranks fifth in population, but eighth in value of manufactured products; Baltimore seventh in population, but thirteenth in value of manufactured products; and Los Angeles seventeenth in population, but thirty-second in value of products. Kansas City, Kan., on the other hand, by reason of the large slaughtering establishments there, ranks fifteenth in value of manufactured products, but is sixty-fifth from the standpoint of population. Of the 75 cities in the United States which lead in population, 19 are not included among the 75 cities having the largest value of manufactures. An equal number of cities, which are not among the 75 leading cities with respect to population, are included among the 75 cities which lead in manufactures.

Fuel Used in Manufactures.—For the year 1909 the manufacturers of the country reported a total expenditure of \$570,067,824 for fuel and the rent of power. Fuel is used in manufactures in three different ways: (1) where it becomes an essential

component of the manufactured product, such as the consumption of coal in making coke or gas, of natural gas in making lampblack, or of wood in making charcoal; (2) where by the combustion of fuel heat is applied to the manipulation of the material, such as in the manufacture of brick, smelting metal, burning lime, the manufacture of cement and salt, or the refining of petroleum; (3) where fuel is employed for the purpose of generating steam for power. The fuels used in 1909 were classified as follows:

Anthracite coal (long tons). 14,839,212
 Bituminous coal (tons).....163,454,678
 Coke (tons).....37,956,770
 Wood (cords).....5,481,811
 Oil, including gasoline (bbl.) 34,328,632
 Gas (1,000 ft.).....451,479,469

In sawmills large quantities of sawdust, slabs, and short pieces of wood are consumed as fuel, in tanneries spent tanbark is used in this manner, and a similar practice is followed in other industries. Considering all branches of manufacture, large quantities of fuel, of which no record is preserved, are thus consumed. Further, it was impossible at the last census to secure a full report of the wood used in the manufacture of charcoal. Therefore, the totals given in the accompanying statement should not be accepted as representing the total quantity of fuel consumed in the manufactures of the country.

There is considerable duplication in the statistics of coal and wood and charcoal used as fuel, and also in the bituminous coal and gas. Bituminous coal used to manufacture coke is not destroyed as a fuel in the process, but, on the contrary, the fuel efficiency of the coke is greater for some purposes than that of the coal from which it is made. There were 59,030,005 tons of bituminous coal used for making coke in 1909; deducting this amount from the total used in manufacturing, leaves 104,424,673 tons, which is a more correct measure of the consumption of this fuel for manufacturing purposes.

The largest proportion of coke, gas, and of both varieties of coal were consumed as fuel in the Middle Atlantic states; the largest proportion

of wood in the East North Central, and of oil in the Pacific Coast states.

Power Employed in Manufactures.—In cases where electric power is generated in the manufacturing establishment where it is utilized, the combination of the power of the electric motors with that of the engines or water wheels used to generate the electricity necessarily results in a duplication of power. Exclusive of the electric power thus generated, there was 18,675,376 h. p. employed in manufactures in the United States during 1909. For 1899 the total was 2,346,142 h. p., and therefore during the 40 years there was an increase of 16,334,634 h. p. Of this increase, steam power formed 79.5 per cent., water power 4.2 per cent., gas 4.6 per cent., electric 10.7 per cent., and other power 0.9 per cent.

The striking feature in the development of power as shown in the following table is the increase in the use of gas engines and of electric power. The increased use of the gas engine in some localities is largely due to the utilization of blast-furnace gas, which heretofore was wasted. The gas engines now employed in manufacturing establishments are capable of developing more than 760,000 h. p.

TYPES OF POWER EMPLOYED

	Horse Power		
	1909	1904	1899
Total (exclusive of duplication in electric power).....	18,675,376	13,487,707	10,097,893
Steam.....	14,199,399	10,825,348	8,139,579
Water.....	1,822,888	1,647,880	1,454,112
Electric.....	4,817,140	1,592,475	492,936
Other.....	904,118	572,890	321,640

The electric horse power represents the power of the motors, and, including the current generated in manufacturing establishments and that purchased, there was a total of 4,817,140 horse power for 1909. Electric power has many advantages for manufacturing purposes. It makes it practicable, by means of power transmission, to establish factories requiring power at desirable locations where fuel may be at a prohibitive

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cost or water power not available. It also enables the distribution of this power by means of motors at convenient places in the factories, where it may be used or cut off at will, and done away with the old time shafting and belting.

In 1899 there were 100,735 manufacturing establishments in the United States in which power was used, by 1909 the number had increased to 185,042 and formed 68.9 per cent. of the total number of factories in the country. The total number of establishments increased by 29.4 per cent., while the number using power increased 83.7 per cent. This increase is due to the more general use of electric power and in some measure to the increased use of gas or internal-combustion engines. In the absolute amount of electric power utilized in manufactures Pennsylvania leads, and is followed by New York, Ohio, Massachusetts, Illinois, Indiana, and New Jersey, in the order named.

The electric power used in manufactures is only a small portion of such power that is generated. It includes only that part of the power generated in the central stations that is sold to manufacturers. The total capacity of central stations and electric railway plants for 1907 amounted to 4,432,641 kw., or approximately 5,910,186 h. p. In addition, there is a large amount of electric power generated in isolated plants for which no record has been made. The increased use of electric power has been a striking feature of the industrial development of the past 20 years. Electricity has other uses in manufacture in addition to that for power, such, for instance, as the electro-chemical and electro-metallurgical processes.

The heavy basic industries, such as iron and steel, lumber, textiles, machine shops, flour mills, cement works,

and pulp and paper mills, necessarily employ the largest amount of power. There were 12 such industries in 1909 for each of which the primary horse power exceeded 300,000. In the lighter industries the use of power is becoming much more general. Electricity is now used in many clothing factories, and in other industries where only human power was in use a few years ago.

Exports and Imports of Manufactures.—The manufactures exported during the year ending June 30, 1912, were valued at \$1,021,753,918, which was the largest amount reported in the history of the country. The manufactures ready for consumption were valued at \$674,362,903, and those for further use in manufacturing, \$347,451,015. These figures do not include foodstuffs which have undergone a process of preparation or manufacture, the exports of which amounted to \$318,262,524. The value of the manufactures exported, exclusive of foodstuffs, was more than double that of 1903, and six times that of 1893. The increase in the exports of manufactures has been more rapid than that of other classes of merchandise; they formed 47 per cent. of the exports in 1912, as compared with 29.8 per cent. in 1902, and 15.6 per cent. in 1892. The imports of manufactured goods for 1912 were valued at \$654,916,390, and formed 39.61 per cent. of the total imports, as compared with \$649,207,832, and 42.51 per cent. in 1911. The partially or wholly manufactured foodstuffs imported in 1912 were valued at \$196,759,741, and in 1911 at \$172,006,501. The finished goods ready for consumption exported during 1912 formed 31.07 per cent. of the total exports, while the same kind of goods imported formed only 21.81 per cent. of the imports.

PATENTS AND INVENTIONS

CHARLES E. MUNROE

Patents.—It is universally admitted that since its patent system was organized and put into effect the industrial activity of the United States has been most marked. Numerous attempts have been made to present

statistically the benefits resulting from protected inventions. The iron and steel industry presents an example of the difficulty met with in doing this, for, while no one doubts that the hot blast of Neilson, the

converter of Bessemer, the open hearth of Siemens, the dry blast of Gayley and numerous other inventions have served greatly to promote the remarkable growth which this industry has shown in recent decades in the United States, yet the effects of inventions upon it cannot be definitely separated from those of the choice of advantageous locations for access to supplies of ore, fuel and flux, or from that scientific management which has led to the use of the most economic units and the simplest and most directly operative arrangements of the several steps in the process of manufacture. Admitting that many industries, such as that of the sewing machine, vulcanized rubber, telephone, phonograph, concrete piling, cinematograph, paint remover, safety razor, radiograph and a multitude of others have sprung from patented inventions, they, too, are all so interrelated with other industries and commercial conditions that a statistical presentation of the income they have separately added to the total income of industry cannot be made. There is no denial that it is large and significant, and this is emphasized by the fact that Holland, with a highly developed commerce, full coffers, and peopled with an intelligent and enterprising race, has remained the least industrially developed of all civilized nations, and that until two years ago she was the only one among them which had no provision for granting patents to inventors.

The A. B. Dick Company Case.—In the face of these recognized benefits there has been in recent years a growing dissatisfaction with the patent laws of the United States or with their administration. The delays in action on applications; the difficulties in securing ready access to all records; the difficulty in preventing infringements; the extent to which litigation was carried and its very expensive character; the meagerness of the damages recovered; the contracts for resale and use; the "working" of processes or manufacture of products, and the matter of compulsory licenses have all been subjects of criticism. For a decade past numerous committees have been

appointed by various scientific societies and organizations formed among inventors and attorneys, with a view to remedying the evils and abuses complained of. The activity of these bodies was aroused during the year by the action of the Supreme Court in its opinion in *re* Sidney Henry *et al. vs. A. B. Dick Company*, handed down March 11, wherein the right of the Dick Company to require purchasers of its mimeograph to use with it only the stencil paper, ink, and other supplies made by the said Dick Company was affirmed, and by the 75 bills which were then introduced into the Senate and House of Representatives, approximately 60 of which were directed to amendments of the patent statutes. Many of these were of a most sweeping and drastic nature, prominent among them being measures providing for the compulsory working of and compulsory licensing of patented inventions; inhibition of any restriction, limitation, or condition in or in connection with the sale, lease, or license of patented articles; and the reorganization of the Patent Office. Action focused on House bill 23417, hearings for criticism of it being held on 27 days. A conference of delegates from several of the leading technical and scientific societies and law associations was held in Washington April 15-16 to consider the whole patent-law situation. The issues aroused such widespread public interest that President Taft made them the subject of an address at the reception he extended to the Eighth International Congress of Applied Chemistry. Because of determined opposition no legislation resulted, but it is expected that efforts to effect legislation will be renewed in the present session of Congress.

Other Supreme Court Decisions.—On Nov. 4, this Court promulgated the first revision in 50 years of the equity rules for federal courts, to take effect Feb. 1, 1913. The revision is designed to remove all unnecessary steps in modes of pleading and to restrict the modes of taking testimony, particularly in patent and copyright cases. On Nov. 18 this court handed down its decision in the "Bathtub Trust" issue which

was adverse to license agreements governing the unprotected product of a patented machine. (See also IX, *Law and Jurisprudence*.)

The Patent Office.—Among the many issues presented, those which appeared to meet with the least opposition were (1) the formation of a final Court of Appeals to replace the existing nine Circuit Courts now exercising concurrent independent authority; (2) the appointment of a Patent Board, similar to the Tariff Board, to report upon the patent situation and the meaning and effect of all proposed legislation; (3) the application of the law merchant to patents; (4) the building of a new and adequate Patent Office Building. This last is expected greatly to facilitate action, especially on applications, and to protect the vast accumulation of valuable records now in jeopardy. There was on Jan. 1, 1912, a balance in the Treasury of \$7,139,189.82 accumulated from the fees and receipts of this Office which it is thought should properly be devoted to this purpose. It is proposed, under S. 1629 of the 61st Congress, that this building be located on the site balancing that now occupied by the Library of Congress. The number of United States patents allowed from Jan. 1 to Nov. 1, 1912, was 29,962, making a total to Nov. 1 for this Office of 1,053,013. This, however, represents but a part of the work assigned the Office. The number of appeals and petitions in the office in 1911 amounted to 5,849. The total number of patents allowed by all the 66 nations granting them, from the earliest period to Dec. 31, 1911, was 3,265,146, of which the United States issued 1,023,051.

Compulsory Working.—One of the most widely discussed of patent issues is that relative to "compulsory working," and it especially affects chemical and other products. Apropos of this, the Tariff Board, in its "Glossary on Schedule A" (p. 208, 1912), says:

In the chemical industry, however, the product is of paramount importance. Contrary also to the requirements of the patent laws of most other industrial countries, the United States does not specify compulsory working of the pat-

ent issued, but permits the patentee, and him only, to import his products into the United States from whatever place he chooses, giving him a monopoly of the market without imposing upon him any obligation or demanding of him any equivalent except the minimum fee paid originally to the Patent Office. In the case of the American inventor, such importation will develop only under exceptional circumstances; with the foreigner, however, it is for obvious reasons the rule, in the chemical industry especially. The American market is the most valuable in the world, and the foreign inventor or his foreign assignees naturally take all the advantage that the law gives them to exploit this market as profitably as they can. This very largely accounts for the tardiness with which the chemical industry develops in the United States, especially in those branches which depend preponderantly upon inventions, and therefore cannot be gauged by any tariff legislation under the theory of cost equalization or under any other theory.

Up to 1907 the English patent laws did not require compulsory working in England of patents issued there, but the situation became so unbearable that the law was changed and the compulsory working feature established, with the result that, according to a report in the *London Times* (Mar. 23, 1911), up to 1911, 50 foreign firms had begun, or were about to begin, manufacturing in England, involving an investment of about \$4,000,000 and the employment of nearly 7,000 wage-earners, with a weekly payroll of \$40,000.

This did not include the large number of licenses granted by the inventors to English manufacturers under the best conditions obtainable, rather than suffer the threatened repeal of the patent. German and American interests were particularly affected by this change in the law, and the manufactures introduced were those of filaments for electric lamps, photographic films, especially for the cinematograph, anilin dyes, medicines, glasses, oxygen, etc., all practically chemical manufactures, besides processes for making mercerized cotton and food products.

With reference to France, it has been stated on good authority, quoted later, that many firms engaged in the chemical industry in that country are controlled by foreigners, and this also is largely due to the compulsory working feature of the French patent laws. Germany imposes the same obligation.

The United States Commissioner of Patents reports that in 1911 the German Reichstag passed a patent law upholding a treaty with the United

States, providing that patents of American inventors should not be revoked by the German Government for failure to work or manufacture in Germany if the product is manufactured in the United States during the concurrent period; that since then the laws of Norway, Sweden, and Switzerland have been so revised as to the working clause that the manufacture of patented inventions in these countries by United States citizens is no longer required in order to sustain their patents, and it is believed that several other countries will speedily follow this example.

Inventions.—Endeavors to distinguish the important inventions of 1912 must necessarily fail, first, because the development of an invention is, as a rule, extended over a long period of time and its successful application or commercial exploitation, through which its value may be gauged, requires more time. An invention must be conceived and reduced to practice before it is patentable. Accepting these conditions as a criterion, the invention of synthetic rubber, which is broadly proclaimed as completed in 1912, may be referred to the conversion of isoprene into caoutchouc, which is old. The formation of isoprene from acetone and similar carbon-containing compounds is old. What appears to be new and well calculated to make the system commercially operative and significant is the method devised through which, by the aid of the proper colonies of enzyme-containing bodies, alcohols, yielding isoprene, can be obtained from starchy substances in place of the ethyl alcohol usually yielded as the major product, for this tends to make the process commercially successful (see XXVI, *Industrial Chemistry*). Another important achievement is that of placing in a charge of explosive within an armor-piercing shell or a bore hole in rock the bight of a nitrotoluene fuse, which is simultaneously detonated from both of its free ends, for, when the impulses meet, the effect appears greater than the sum of the two, and the result initiates explosion in quite insensitive masses, thus insuring safety and increasing

efficiency in the use of these very dangerous substances. In the moving-picture field improvements have been made in all of the many elements, such as the composition of the film, its mode of manufacture, its treatment and development, the mechanism for operating it, and the device in which, or against which, it is exhibited.

Through the courtesy of Hon. E. B. Moore, Commissioner of Patents, a canvass has been made of the 45 principal examiners as to the advance in the art shown in their divisions by patents allowed in 1912 which, in their expert judgment, show distinct progress. The result, given in terms of really progressive patents allowed, is as follows:

Traction	7
Fluids and fluid transmission	18
Masonry and safety razors	2
Plastics	4
Conveyors	11
Telephony	9
Machinery, dairy and domestic	27
Games and toys	17
Metal drawing	12
Garment supporters	9
Metallurgy	44
Receptacles	7
Musical devices and harvesters	14
Measuring and recording devices	10
Shoe and harness machinery and devices	136
Artificial limbs and coffins	11
Wheels and tires	17
Steam engines and accessories	5
Machine elements	8
Locomotives and conveyers	28
Water distribution	24
Recording devices	2
Signaling	5
Spinning and weaving	16
Fire engines and other apparatus	18
Internal-combustion engines	3
Oil wells and husbandry	10
Applications of electricity	28
Agricultural machinery	14
Electric generation	5
Furniture	13
Printing and paper making	13
Chemicals and allied substances	8
Separation and crushing	8
Woodworking and use	9
Cleaning and sharpening	12
Fastening and sealing	6
Heating	1
Sewing machines and apparel	19
Lighting	6
Chemical products and processes	9
Carbonating and dispensing beverages	37

XXII. TRADE, TRANSPORTATION AND COMMUNICATION.

GROVER G. HUEBNER

MERCHANT MARINE

Tonnage Afloat.—The total documented merchant fleet of the United States in the fiscal year 1912 comprised 25,991 vessels of 7,638,790 gross tons. This tonnage exceeds that of 1911 by 130,708, that of 1905 by 1,182,247, and that of 1900 by 2,473,951, as shown in the following table:

YEAR ENDING JUNE 30	REGISTERED VESSELS		ENROLLED VESSELS		LICENSED VESSELS UNDER 20 TONS		TOTAL DOCUMENT- ED MERCHANT MARINE	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1880.....	2,378	1,352,810	16,410	2,649,353	5,924	65,871	24,712	4,068,034
1890.....	1,527	946,695	15,153	3,201,481	6,877	85,918	23,467	4,424,497
1895.....	1,260	838,187	14,408	3,705,104	7,572	92,669	23,240	4,635,960
1900.....	1,330	826,694	13,786	4,239,569	8,217	98,576	23,333	5,164,839
1905.....	1,372	954,513	14,126	5,391,802	9,183	110,228	24,681	6,456,543
1909.....	1,632	887,505	14,072	6,381,053	9,983	120,197	25,688	7,388,755
1910.....	1,526	791,825	14,049	6,593,728	10,165	122,529	25,740	7,508,082
1911.....	1,703	872,671	13,433	6,640,820	10,355	125,299	25,991	7,638,790

The increase was mainly in the domestic fleet, but the tonnage of the registered fleet engaged in the foreign trade also increased slightly as compared with the previous year. The increase from 791,825 to 872,671 gross tons in the registered fleet, however, does not return this branch of the American marine to its position of 1909, and does not indicate a change in the general decline, which has occurred ever since 1861. The increase of from 6,593,728 gross tons in 1910 to 6,640,820 in 1911, on the contrary, represents the steady increase in the coastwise (enrolled) fleet which has been in progress for over 20 years.

The recent federal law known as the Panama Canal Act, approved Aug.

24, 1912, contains a general provision which may result in a future increase in the registered fleet engaged in the foreign trade. Section 5 of this Act provides that foreign-built vessels, not over five years old at the time of application, owned wholly by American citizens or American corporations and managed by an American president and managing directors, may register under the American flag to engage exclusively in the foreign trade. This Act applies the principle of free ships to the foreign trade of the United States.

Geographical Distribution.—The documented shipping of the United States on June 30, 1911, was distributed among geographical divisions and classes of vessels as follows:

GEOGRAPHICAL DIVISION	SAILING VESSELS		STEAM VESSELS		CANAL BOATS		BARGES		TOTAL	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
Atlantic and Gulf.....	7,159	1,062,469	7,145	1,781,853	210	24,305	2,367	691,178	16,881	3,559,805
Porto Rico.....	87	8,323	13	2,010	.....	.....	.....	.....	100	10,333
Pacific Coast.....	621	289,979	2,270	576,256	.....	.....	943	88,190	3,834	954,425
Hawaii.....	12	8,525	30	10,655	.....	.....	.....	.....	42	19,180
Northern Lakes.....	324	228,519	2,174	2,564,060	449	48,065	339	102,879	3,286	2,943,523
Western Rivers..	1	8	1,675	139,235	.....	.....	172	12,281	1,848	151,524
Total.....	8,20	1,597,823	13,307	5,074,069	659	72,370	3,821	894,528	25,991	7,638,790

XXII. TRADE, TRANSPORTATION AND COMMUNICATION

THE WORLD'S MERCHANT MARINE, STEAM VESSELS ONLY

(Lloyd's Register)

FLAG	1900		1910		1912	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
American:						
Sea.....	690	878,564	1,073	1,641,919	1,171	1,797,929
Lakes.....	242	576,402	563	2,146,769	588	2,262,480
Austro-Hungarian.....	214	387,471	365	777,729	392	902,704
British.....	7,903	12,149,090	9,837	18,059,037	10,014	19,202,770
Danish.....	369	412,273	553	671,828	548	703,520
Dutch.....	289	467,209	532	983,049	602	1,104,220
French.....	662	1,052,193	875	1,448,172	932	1,638,501
German.....	1,209	2,159,919	1,822	3,959,318	1,908	4,276,191
Italian.....	312	540,349	450	987,559	536	1,119,121
Japanese.....	484	488,187	846	1,146,977	960	1,344,991
Norwegian.....	806	704,683	1,312	1,422,006	1,495	1,695,321
Spanish.....	422	642,231	511	746,748	526	756,136
Swedish.....	678	418,550	964	782,508	1,006	866,853
Other Countries.....	1,591	1,432,237	2,305	2,516,076	11,539	2,847,440
Total.....	15,898	22,369,358	22,008	37,289,695	23,217	40,518,177

The aggregate documented tonnage of the American merchant marine is distributed among the leading customs districts as follows:

CUSTOMS DISTRICTS	1910	1911
New York.....	1,601,692	1,641,777
Cuyahoga, Ohio.....	880,614	895,286
Duluth.....	843,845	908,509
San Francisco.....	518,979	532,653
Puget Sound.....	266,957	276,866
Philadelphia.....	286,954	304,107
Boston.....	196,707	212,995
Baltimore.....	198,117	232,099
Buffalo Creek, N. Y.....	268,838	278,534
Detroit.....	191,194	177,071
Bath, Me.....	100,677	94,800
Perth Amboy.....	120,708	127,156

The tonnage of documented sailing vessels declined from 1,655,473 gross tons in 1910, to 1,597,823 gross tons in 1911, in conformity with its general decline since 1861. The documented steam fleet increased from 4,900,361 to 5,074,069 gross tons; and of the documented barge fleet from 878,180 to 894,528 gross tons. The growing use of barges along the At-

lantic and Gulf coasts continued throughout 1912, but is not fully indicated in the above statistics, because many unrigged craft are not documented.

Undocumented Craft.—A considerable portion of the American merchant marine consists of undocumented vessels not included in the above statistical returns. No reliable returns of these vessels have been made since 1906, at which time the United States Census Office reported a total of 19,497 vessels with a gross tonnage of 6,579,402 tons. A more detailed statement was made in the YEAR BOOK for 1910 (p. 523).

Relative Decline of American Deep-Sea Shipping.—In the fiscal year 1911 the proportion of the value of the foreign trade of the United States carried in American vessels was 8.7 per cent., as it was in the previous year. This is a decline from 9.5 per cent. in 1909, and from 66.5 to 92.5 per cent. prior to the Civil War.

AMERICAN VESSELS IN THE FOREIGN TRADE

YEAR	TOTAL IMPORTS AND EXPORTS				Per Cent. in American Vessels
	In Cars and Other Land Vehicles	BY SEA			
		American Vessels	Foreign Vessels	Total	
1821		\$113,201,462	\$14,358,235	\$127,559,697	88.7
1826		150,331,636	12,238,163	162,569,799	92.5
1840		198,424,609	40,802,856	239,227,465	82.9
1850		507,247,757	255,040,793	762,288,550	66.5
1880	\$20,981,393	258,346,577	1,224,265,434	1,482,612,011	17.4
1900	154,895,650	195,084,192	1,894,444,424	2,089,528,616	9.3
1905	242,265,329	290,607,946	2,103,201,462	2,393,809,408	12.1
1908	261,861,952	272,512,228	2,520,740,958	2,793,253,186	9.8
1909	253,580,297	258,657,217	2,462,693,814	2,721,351,031	9.5
1910	319,163,630	260,800,278	2,722,813,242	2,983,613,520	8.7
1911	365,903,334	280,206,464	2,930,436,506	3,210,642,970	8.7

XXII. TRADE, TRANSPORTATION AND COMMUNICATION

Of the total vessel entrances and clearances in the foreign trade, 22 per cent. of the tonnage was American in 1910, 23 per cent. in 1911, and 22 per cent. in 1912.

Total Shipping in the Foreign Trade.—The total shipping entered in the foreign trade increased from 42,674,989 net tons in the fiscal year 1911 to 46,158,071 in 1912; and the total shipping cleared increased from 42,437,147 net tons in 1911 to 46,416,912 in 1912. The geographical distribution of American shipping in the foreign trade in the fiscal year 1912 was as follows:

GEOGRAPHICAL DIVISION	Entered	Cleared
Atlantic Ports.....	24,005,037	23,371,642
Lake Ports.....	11,498,985	11,710,894
Gulf Ports.....	6,100,228	6,441,926
Pacific Ports.....	4,553,821	4,891,151
Corpus Christi, Tex.....	.....	1,299
Total.....	46,158,071	46,417,912

This was divided among the leading ports as follows:

PORT	Entered	Cleared
New York.....	13,673,765	13,549,133
Lake Ports.....	11,498,985	11,710,894
Boston.....	2,948,244	1,872,493
Philadelphia.....	2,700,193	2,187,403
New Orleans.....	2,214,681	2,360,043
Puget Sound.....	2,498,150	2,857,813
Baltimore.....	1,192,037	1,489,406
Galveston.....	1,025,257	1,349,347
San Francisco.....	928,289	1,154,942
Mobile.....	737,091	784,193
Key West.....	475,212	465,221
Norfolk and Portsmouth.....	459,237	1,027,172
Tampa.....	465,325	89,364
Portland, Me.....	450,735	434,254
Pensacola.....	430,262	514,791
Savannah.....	408,893	738,832
Sabine, Tex.....	383,619	510,984
Newport News.....	367,920	542,145
Passamaquoddy.....	311,985	363,694
Charleston.....	261,398	116,555

Tonnage Built.—During the fiscal year 1911, 1,422 documented vessels of 291,162 gross tons were constructed in American shipyards as follows:

Of this aggregate, which is less than the tonnage constructed in the previous year by 50,906 gross tons, 46 vessels have a gross tonnage of over 1,000 tons each, and a total of 169,324 tons or 58 per cent. of the aggregate. The steel tonnage of the year comprised 201,973 gross tons, as compared with 250,624 in 1910. Of the total documented tonnage built in 1911, moreover, 227,231 tons were steam vessels, 47,977 barges, 5,862 canal boats, and 10,092 sailing vessels. The decline in vessel construction was chiefly on the Great Lakes, where, due largely to the large output of the previous year, the output of the shipyards in 1911 declined by over one-half, as compared with the previous year.

The Panama Canal Act, approved Aug. 24, 1912, provides that foreign shipbuilding and repair materials may be imported free of duty, provided the vessels so constructed do not enter into contract with the Postmaster General under the mail-contract law of 1891. While under the same Act it is now legal to admit foreign-built American-owned vessels to American registry for navigation in the foreign trade, it is not anticipated that American shipyards will suffer as a result, because in the recent past they have built very few vessels for American registry. Their field of activity has been the enrolled fleet, the construction of which is still restricted exclusively to American shipyards.

Vessel Accidents and Tonnage Destroyed.—The loss to vessels and property due to vessel accidents was somewhat less in 1911 than in the previous year. The number of wrecks in 1911 in American waters aggregated 1,227, as compared with 1,443 in 1910 and 1,341 in 1909. Of these, 460 occurred on the Atlantic and Gulf coasts, 291 on the Great Lakes, 168

GEOGRAPHICAL DIVISION	1909		1910		1911	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Atlantic and Gulf Coast.....	582	108,904	601	150,828	588	163,178
Northern Lakes.....	174	100,402	281	168,751	216	94,157
Pacific Coast.....	276	22,759	279	16,870	407	27,234
Western Rivers.....	207	5,940	193	5,488	202	6,393
Porto Rico.....	8	85	7	131	9	200
Total Construction.....	1,247	238,090	1,361	342,068	1,422	291,162

on the inland rivers, 167 on the Pacific coast, and 151 at sea and in foreign waters. The following table shows the number of vessels and tonnage totally lost, the tonnage damaged, the known loss to vessels and cargoes, and the loss of life:

	1910	1911
Wrecks.....	1,443	1,227
Vessels totally lost.....	365	294
Tonnage totally lost.....	135,305	101,365
Tonnage damaged.....	2,000,997	1,475,688
Loss to vessels.....	\$11,058,840	\$9,565,995
Loss to cargoes.....	\$2,565,580	\$1,694,630
Lives lost.....	403	262

Steamers, Size and Speed.—The two largest merchant steamers built in the United States in 1911 were the *Honolulu* and *Georgian*, with gross tonnages of 7,059 and 6,806 tons, respectively. As in the preceding year, the largest American registered steam vessel is still the *Minnesota*, with a gross tonnage of 20,718 tons. The registered merchant fleet contains but nine vessels with a tonnage in excess of 10,000 gross tons, seven in excess of 8,000, and 19 in excess of 5,000. The maximum size of American vessels compares unfavorably with the 32,500 gross tons of the *Mauretania* and *Lusitania* of the Cunard Steamship Co., and the 45,000 gross tons of the *Olympic* of the White Star Line.

On April 15, 1912, the ill-fated *Titanic* (46,328 gross tons), likewise of the White Star Line, was totally wrecked as a result of collision with an iceberg. Because of the great loss of life the Committee on Commerce of the United States Senate and the Board of Trade of Great Britain separately conducted an extensive international investigation into the causes of the disaster. (See I, *The Titanic Disaster*.)

Ship Subsidies and Mail Payments.

—The total amount paid by the United States Government for the transportation of the foreign mails in the fiscal year 1911 was \$3,315,349, as compared with \$3,203,821 in 1910. The mail subsidies paid under the Mail Contract Act of March 3, 1891, amounted to \$1,079,945, as compared with \$1,114,603 in 1910. The mail route from San Francisco to Sydney, Australia, was restored during the

year, after being discontinued since March, 1907, but otherwise there have been no changes of importance in the payments under the Act. (For provisions of the Panama Canal Act relative to free shipbuilding materials see under "Tonnage Built," *supra*. For provisions of the Act relative to the remission of tolls on coastwise ships passing through the Isthmian Canal, see III, *International Relations*, and X, *The Panama Canal*. For subsidies in foreign countries, see AMERICAN YEAR BOOK, 1910, pp. 525-6; and 1911, p. 540.)

The Panama Canal Act.—An act of great importance to the future shipping of the United States and of the world is the Panama Canal Act, which was recently enacted by Congress and approved Aug. 24, 1912. The act provides for the operating organization of the Canal and the government and sanitation of the Canal Zone, and authorizes the President to fix tolls. The maximum tolls permitted are not in excess of the equivalent of \$1.25 per net ton. Vessels engaged in the coastwise business are exempted from the payment of tolls.

The Act also provides that no railroad-owned steamship line which is or may be in competition with the owning railway shall be permitted to pass through the canal, the Interstate Commerce Commission having jurisdiction to determine questions of fact. Likewise no vessel owned or operated by any concern doing business in violation of the Sherman anti-trust law may pass through the Canal, questions of fact being determined by any federal court of competent jurisdiction. (See also X, *The Panama Canal*; and XIII, *Economic Conditions and the Conduct of Business*.)

Provisions relative to free shipbuilding materials and free shipping in the foreign trade were stated above (under "Tonnage Built" and "Tonnage Afloat"). Provisions relative to through railroad and water routes are stated in the sections, *Railroads*, below (under "Federal Legislation").

Panama Tolls.—In accordance with the above statute, the President has promulgated the following schedule of tolls (see also X, *The Panama Canal*):

1. On merchant vessels carrying passengers or cargo, \$1.20 per net vessel ton—each 100 cu. ft. of actual earning capacity.

2. On vessels in ballast without passengers or cargo, 40 per cent. less than the rate of tolls for vessels with passengers or cargo.

3. On naval vessels other than transports, colliers, hospital ships and supply ships, 50 cents per displacement ton.

4. On army and navy transports, colliers and hospital ships and supply ships, \$1.20 per net ton, the vessels to be measured by the same rules as are employed in determining the net tonnages of merchant vessels.

International Congress of Navigation.—On May 23-28, 1912, the twelfth International Congress of Navigation met at Philadelphia, Pa. Delegates from nearly all commercial nations attended to consider the various navigation questions, and the papers and reports which had been previously prepared and printed.

The following were the questions considered and the conclusions arrived at:

I. Inland Navigation.

1st Question.—Improvement of rivers by regulation, dredging and reservoirs, or by canalization, or lateral canals.—The congress concluded that the use of any one of these methods, rather than another, depended upon the special circumstances of each particular case; that no fixed rules may be formulated; and that scientific study along various lines is desirable.

2d Question.—Dimensions to be assigned in any given country, to canals of heavy traffic; principles of operating; and dimensions and equipment of the locks.—It was concluded that standard dimensions for inter-connecting canals are desirable; that practical harbor and trans-shipment facilities are as important as fixed dimensions; that the canal and boats be improved as the traffic requires; that trains of boats towed by tugs, or

self-propelling boats are desirable; and that the locks should be operated with mechanical appliances.

3d Question.—Intermediate and terminal ports; best methods for combining, facilitating and harmonizing the transfer of freight between railways and waterways.—It was held that the problem is partly administrative or governmental and partly technical or mechanical; that coöperation between railways and waterways should be secured by effective national, state and local regulation; that each port should be systematically organized and have private terminals supplemented by publicly owned or controlled wharves, docks and warehouses for the public use; that the legislative and administrative measures taken must vary with different countries, and that the technical layout of ports and the appliances best adapted must be determined for each port separately.

II. Ocean Navigation.

1st Question.—Means for docking and repairing vessels.—Graving docks were held to be the most satisfactory method of docking large vessels, but floating docks were regarded as preferable or necessary in some cases.

2d Question.—Dimensions to be given to maritime canals.—The congress decided that in a maritime canal a wet section five times as large as the immersed portion of the largest ship which is to use the canal is desirable, and also a depth of one metre under the keel. The speed of navigation and volume of traffic, however, are local conditions which make fixed rules impossible.

3d Question.—Mechanical equipment of ports.—The section of the congress dealing with this recommended that the matter of transferring miscellaneous cargoes from vessel hold or deck, or from pier's side to points within the terminal limits be considered in the next annual Navigation Congress.

EXTERNAL COMMERCE OF THE UNITED STATES

The total foreign trade of the United States in merchandise during the fiscal year 1912 was valued at \$3,857,587,443, \$2,204,322,409 of exports and \$1,653,264,934 of imports. It ex-

ceeded that of 1911 by \$280,942,139. Exports as well as imports were heavier in 1912 than in any other fiscal year in the history of American commerce.

XXII. TRADE, TRANSPORTATION AND COMMUNICATION

Exports to Foreign Countries.—The almost general increase of 1910 and 1911 continued at an accelerated rate throughout the fiscal year 1912. Exports were distributed by continents as follows:

EXPORTS OF MERCHANDISE BY CONTINENTS

CONTINENT	1910	1911	1912
Europe.....	\$1,135,914,551	\$1,308,275,778	\$1,341,732,789
North America.....	385,520,069	457,059,179	516,837,671
South America.....	93,246,820	108,894,894	132,310,451
Asia.....	60,861,813	85,422,428	117,461,561
Oceania.....	50,890,087	66,067,313	71,936,513
Africa.....	18,551,380	23,600,607	24,043,424
Total.....	\$1,744,984,720	\$2,049,320,199	\$2,204,322,409

The export trade of 1912 exceeded that of 1911 by \$155,002,210, and, as stated in the last issue of the YEAB BOOK, the export trade of 1911 exceeded that of any previous year. The increase in exports was not so general as in the two previous years. There were slight declines in the exports shipped to England, Ireland, Spain, Mexico, Roumania, British Honduras, Newfoundland and Labrador, Trinidad and Tobago, the French West Indies, Ecuador, the Falkland Islands, British and French Guiana, Peru, Venezuela, French and German leased Chinese territory, Korea, the Dutch and French East Indies, Turkey, the smaller British islands of Oceania, British South Africa, Italian and Spanish Africa, Liberia, Morocco and Egypt. In other parts of the commercial world the exports of the United

States increased, particularly in Canada, Germany, Holland, China, Japan and Argentina, as shown in the table below.

The relative proportions exported to each of the continental divisions in 1912 were: Europe, 60.8 per cent.; North America, 23.4 per cent.; South America, 6 per cent.; Asia, 5.3 per cent.; Oceania, 3.2 per cent.; and Africa, 1.1 per cent. The export trade with Europe in 1911 comprised 63.84 per cent., and in 1910, 65.1 per cent. of the total, so that even though there has been an increase in the exports to Europe, the export trade with non-European markets has increased relatively more rapidly.

The exports to the leading individual markets are shown in the following table (see also table in Department IV, *Foreign Affairs*):

EXPORTS OF MERCHANDISE BY PRINCIPAL COUNTRIES

MARKET	1910	1911	1912
Germany.....	\$249,555,926	\$287,495,814	\$306,959,021
Great Britain.....	505,552,871	576,613,974	564,372,186
France.....	117,627,466	135,271,648	135,388,851
Canada.....	215,990,021	269,806,013	329,257,362
Netherlands.....	84,944,878	96,103,376	103,702,859
Italy.....	53,467,053	60,580,766	65,261,268
Mexico.....	58,193,704	61,281,715	52,847,129
Belgium.....	41,116,585	45,016,622	51,387,618
Cuba.....	52,858,758	60,709,062	62,203,051
Argentina.....	40,694,941	43,918,511	53,158,179
Japan.....	21,959,310	36,721,409	53,478,046

In 1912, 47.08 per cent. of the domestic commodities exported, not including prepared foodstuffs, consisted of manufactures, as compared with 45.07 per cent. in 1911 and 44.85 per cent. in 1910. Their total value was \$1,021,753,918. Of the remaining ex-

ports, 33.29 per cent. of the total consisted of crude materials for use in manufacturing; 14.66 per cent. of foodstuffs partly or wholly manufactured; 4.59 per cent. of crude foodstuffs and food animals; and 38 per cent. of miscellaneous merchandise.

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IMPORTS AND EXPORTS OF MERCHANDISE, BY CLASSES

YEAR ENDED JUNE 30	Foodstuffs in Crude Condition, and Food Animals	Foodstuffs Partly or Wholly Manufactured	Crude Ma- terials for Use in Manu- facturing	Manufac- tures for Further Use in Manu- facturing	Manufac- tures Ready for Con- sumption	Miscel- laneous	Total
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
IMPORTS							
1900..	97,916,293	133,027,374	276,241,152	134,222,045	203,126,341	5,407,979	849,941,184
1901..	110,385,208	125,540,254	248,006,751	127,576,924	205,505,580	6,157,048	923,172,165
1902..	120,280,302	95,350,563	303,001,868	147,656,292	231,420,820	5,611,410	903,320,948
1903..	119,202,674	116,620,623	330,491,084	195,750,847	257,740,815	5,896,825	1,025,719,237
1904..	132,223,895	118,222,862	320,794,431	160,233,890	252,812,835	6,754,620	991,087,371
1905..	146,130,903	145,355,839	389,160,658	177,827,960	252,349,842	6,665,061	1,117,513,071
1906..	134,322,347	140,358,109	414,687,999	220,298,751	307,674,728	9,100,980	1,226,562,446
1907..	149,747,693	158,656,263	477,027,174	274,096,464	364,192,884	10,700,947	1,434,421,425
1908..	145,577,427	147,008,870	363,823,723	196,320,135	331,240,635	10,406,902	1,194,341,792
1909..	164,110,674	165,700,920	451,359,259	222,101,622	299,106,235	9,541,514	1,311,920,924
1910..	144,776,636	181,566,572	566,270,770	285,138,373	367,723,367	11,471,712	1,556,947,430
1911..	181,194,863	172,006,501	511,362,140	287,785,652	361,422,180	13,454,769	1,527,226,105
1912..	230,358,230	196,100,608	555,986,041	293,739,134	360,018,963	17,061,958	1,653,264,934
EXPORTS*							
1900..	227,347,193	318,126,502	325,589,000	152,890,591	331,955,684	14,854,601	1,370,763,571
1901..	246,304,140	336,605,378	397,767,463	148,013,625	317,764,367	13,917,833	1,460,462,806
1902..	184,786,389	328,831,350	373,595,243	131,918,311	321,946,540	14,404,028	1,355,181,861
1903..	185,308,064	323,244,697	408,442,137	140,666,864	327,468,629	7,100,911	1,392,231,302
1904..	135,747,224	308,836,077	461,424,464	174,876,659	348,734,801	5,559,792	1,435,179,017
1905..	118,185,098	283,065,098	472,114,493	209,926,174	402,049,798	6,403,980	1,491,744,641
1906..	177,216,467	347,385,463	500,536,700	226,210,513	459,812,655	6,791,584	1,717,953,382
1907..	167,348,227	345,706,609	593,145,135	259,442,028	480,681,423	7,394,612	1,853,718,034
1908..	189,051,824	331,961,693	556,681,462	261,105,883	489,469,958	6,515,567	1,834,786,357
1909..	135,693,409	302,555,341	520,907,436	231,186,607	440,229,407	7,783,393	1,638,355,593
1910..	109,828,320	259,259,654	565,934,957	267,765,916	499,215,329	8,079,822	1,710,083,998
1911..	103,401,553	282,016,883	713,018,206	309,151,989	598,367,852	7,592,542	2,013,549,025
1912..	99,899,270	318,838,493	723,008,839	348,149,524	672,268,163	8,155,539	2,170,319,828

*Exports of domestic merchandise only.

The largest individual items were: cotton, \$565,849,271; iron and steel, not including ore, \$268,154,262; meat and dairy products, \$156,260,876; breadstuffs, \$123,979,715; copper, not including ore, \$113,958,919; mineral oil, \$112,472,100; lumber and wood manufactures, \$96,782,186; leather and leather manufactures, \$60,756,772; tobacco and tobacco manufactures, \$48,305,042; cotton manufactures, \$50,769,511; and agricultural implements, \$35,640,005. The only declines in these general groups as compared with the previous year were in cotton and breadstuffs.

Ports of Export.—The leading individual ports of export in 1911 and 1912 were:

Ports	1911	1912
New York.....	\$772,552,449	\$817,945,803
Galveston.....	220,504,917	218,146,097
New Orleans.....	172,835,293	149,160,910
Baltimore.....	85,120,843	92,210,877
Philadelphia.....	69,956,380	69,069,730
Savannah.....	72,076,045	104,288,925
Boston.....	71,534,082	69,692,171
Buffalo Creek, N. Y.	46,182,245	55,016,025
Detroit.....	46,233,833	55,911,967
San Francisco.....	40,624,903	49,249,734
Puget Sound.....	39,361,303	63,745,572
Mobile.....	30,154,037	31,230,117
Huron, Mich.....	27,305,038	32,199,443

Gains of unusual extent were made at New York, Baltimore, Savannah, Buffalo Creek, Detroit, San Francisco, Huron, and Puget Sound.

In addition to the exports of merchandise, gold valued at \$57,328,348, and silver valued at \$64,890,665 were exported to foreign countries in 1912.

Exports to American Dependencies.

—The following table shows the shipments of domestic merchandise to our non-contiguous territories in 1911 and 1912:

	1911	1912
Alaska.....	\$15,736,510	\$18,809,270
Hawaii.....	21,677,213	24,418,671
Porto Rico.....	33,774,263	37,424,545
Philippines.....	19,677,802	23,703,935
Guam.....	1,057	253
Tutuila.....	82,561	83,048
Total.....	\$90,949,406	\$104,439,722

There was an increase of \$13,490,316 in the shipments to our dependencies in 1912, as compared with the previous year. The increase was general in all the dependencies except Guam, and the aggregate was the greatest in the history of American trade. The leading items, as usual, were iron and steel goods, cotton

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goods, mineral oils, lumber, bread-stuffs, meats, and rice. In addition to domestic merchandise, the shipments to these markets in 1912 included foreign merchandise valued at \$1,915,807, and gold and silver valued at \$3,242,964.

Imports from Foreign Countries.—In contrast with the decline during 1911, the import trade of the United States in 1912 increased by \$126,038,829 as compared with the previous

year. It exceeded the import trade of 1910 and was the greatest in the history of our foreign trade. As shown in the following table, the increase was general in each continental division: 49.5 per cent. of the total imports were received from Europe; 20.2 per cent. from North America; 13.0 per cent. from South America; 13.7 per cent. from Asia; 2.2 per cent. from Oceania; and 1.4 per cent. from Africa.

IMPORTS OF MERCHANDISE BY CONTINENTS

CONTINENT	1910	1911	1912
Europe.....	\$806,271,280	\$768,167,760	\$819,585,326
North America.....	306,767,486	305,496,793	334,072,039
South America.....	196,104,786	182,623,750	215,089,316
Asia.....	193,155,344	213,449,730	225,468,250
Oceania.....	37,099,795	30,274,452	36,464,115
Africa.....	17,489,739	27,213,620	22,585,888
Total.....	\$1,558,888,430	\$1,527,226,105	\$1,653,264,934

The imports from the leading individual countries in 1910, 1911, and 1912 were as follows (see also table in Department IV, *Foreign Affairs*):

IMPORTS OF MERCHANDISE BY PRINCIPAL COUNTRIES

COUNTRY	1910	1911	1912
Great Britain.....	\$271,029,772	\$261,289,106	\$272,940,700
Germany.....	168,806,237	163,242,560	171,387,380
France.....	132,363,346	115,414,784	124,548,458
Brasil.....	108,154,491	100,867,184	123,881,644
Cuba.....	122,528,037	110,309,468	120,154,326
Canada.....	95,128,310	100,863,418	108,813,368
Japan.....	66,398,761	78,527,496	80,607,469
Italy.....	49,868,367	47,324,809	48,028,529
Mexico.....	58,795,943	57,450,111	65,915,313
British India.....	45,320,268	43,952,047	50,948,901

Contrary to the decline in the imports from each of these countries, except Canada, during 1911, there was an increase in every instance during the past year. Among the lesser countries in the import trade, the only declines of importance were in China and Egypt. Minor declines occurred in Austria-Hungary, Finland, Norway, Portugal, Roumania, Costa Rica, Newfoundland, Haiti, Dutch Guiana, Paraguay, Korea, Asiatic Turkey, New Zealand, British West Africa, German and Portuguese Africa, Madagascar, and Morocco. The imports from all other parts of the commercial world increased during 1912.

In 1912, 33.57 per cent. of the imports received from foreign countries consisted of crude materials for manufacturing purposes; 21.82 per cent. of finished manufactures; 17.80 per

cent. of manufactures for further use in manufacturing; 11.90 per cent. of foodstuffs, partly or wholly manufactured; 13.88 per cent. of crude foodstuffs and food animals; and the remainder of miscellaneous merchandise. Each group of imported commodities, except finished manufactures, increased somewhat in volume. The main increases were in the imports of coffee, sugar, hides and skins, rubber, copper ingots, and bars, fibers and fiber manufactures, fruits and nuts, leather manufactures, precious stones, wines and spirits, tobacco and wool. The principal declines were those of chemicals, raw cotton, cotton goods, iron ore, iron and steel manufactures, lead, oils, paper, silk and silk products, and lumber.

The import trade as distributed among the leading ports was as follows:

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IMPORTS BY GROUPS OF PORTS

GROUPS OF PORTS	1910	1911	1912
Atlantic ports.....	\$1,227,154,723	\$1,183,540,071	\$1,268,100,584
Pacific ports.....	88,616,730	102,702,653	111,488,360
Northern border and Lake ports.....	129,123,041	137,723,850	137,882,121
Gulf ports.....	68,704,561	82,147,619	92,244,523
Interior ports.....	20,397,177	20,747,924	21,037,117
Mexican border.....	22,911,198	20,363,988	22,512,229
Total.....	\$1,556,947,430	\$1,527,226,105	\$1,653,264,934

The port of New York in 1912 imported articles valued at \$975,744,320, or 59 per cent. of the total, as compared with 60 per cent. in 1910 and 57 per cent. in 1911. The other leading importing ports are Boston, \$129,293,016; Philadelphia, \$85,038,185; San Francisco, \$59,235,471; New Orleans, \$75,089,887; Puget Sound, \$39,-

011,250; and Baltimore, \$26,438,400.

In addition to the imports of merchandise, gold valued at \$48,936,500, and silver valued at \$47,050,219 were imported in the fiscal year 1912.

Imports from American Dependencies.—The receipts of merchandise from our non-contiguous possessions are shown in the following table:

IMPORTS FROM NON-CONTIGUOUS TERRITORIES

	1910	1911	1912
Alaska.....	\$12,349,462	\$13,813,824	\$21,597,712
Hawaii.....	46,161,288	41,180,195	55,055,816
Porto Rico.....	32,095,788	34,764,007	42,873,401
Philippines.....	17,317,897	17,400,398	23,257,199
Guam.....			
Tutuila.....	37,234	99,040	1
Total.....	\$107,961,669	\$107,257,464	\$421,784,128

¹ Figures not yet available.

In 1912 they were valued at \$142,784,128, or \$35,526,664 in excess of their value in 1911, and at more than during any previous year. In the trade with the Philippines, the balance is slightly in favor of the United States, but all other dependencies shipped more merchandise to the United States than they received in return. The leading commodities shipped to the United States are sugar, Manila hemp, canned salmon, cigars and tobacco, coffee and fruits.

In addition, during the year 1912, the non-contiguous territories and dependencies shipped foreign merchandise valued at \$200,606 to the United States and gold and silver valued at \$21,430,529.

The Balance of Trade.—The general movement of the balance of trade since 1900, so far as it concerns shipments and receipts of merchandise and specie, is shown in the following table (see also XIII, *Economic Conditions and the Conduct of Business*).

FISCAL YEAR	MERCHANDISE			MERCHANDISE AND SPECIE		
	Imports	Exports	Excess of Exports	Imports	Exports	Excess of Exports
1900.....	\$849,941,184	\$1,394,483,082	\$544,541,898	\$929,770,670	\$1,499,462,116	\$569,691,446
1901.....	823,172,165	1,487,764,991	664,592,826	925,609,873	1,605,235,348	679,625,475
1905.....	1,117,513,071	1,518,561,666	401,048,595	1,198,646,897	1,660,004,502	461,357,605
1906.....	1,226,562,446	1,743,864,500	517,302,054	1,367,226,716	1,848,307,154	481,080,438
1907.....	1,434,421,425	1,880,851,078	446,429,653	1,591,878,298	1,988,989,327	397,111,029
1908.....	1,194,341,792	1,860,773,346	666,431,554	1,387,337,210	1,991,127,472	603,790,262
1909.....	1,311,920,224	1,663,011,104	351,090,880	1,399,879,023	1,810,225,714	410,346,691
1910.....	1,556,947,430	1,744,984,720	188,037,290	1,645,504,529	1,918,834,796	273,330,267
1911.....	1,527,226,105	2,049,320,199	522,094,094	1,646,770,367	2,136,579,810	489,809,443
1912.....	1,653,264,934	2,204,322,409	551,057,475	1,749,251,653	2,326,541,422	576,289,769

The balance of trade turned in favor of the United States in the later 70's and gradually increased in mag-

nitude until it reached its maximum of \$679,625,475 in 1901. The decline which then began was not checked

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until 1911. The increase in the balance then begun has continued throughout the year. The excess of exports over imports of merchandise in 1912 was \$551,057,475, as compared with \$188,037,290 in 1910; and the excess of exports of merchandise and specie combined was \$576,289,769, as compared with \$273,330,267 in 1910.

In European, North American, Oceanic and African markets the balances are in favor of the United States, and in the South American and Asiatic markets there is a shortage. The unfavorable balance in South America is found chiefly in Brazil, while Argentina is a notable exception to the general trade situa-

tion in South America, the United States having a favorable balance of \$23,311,163. European countries shipping more to the United States in 1912 than they purchased in return were Greece, Iceland, Serbia, Sweden, Ireland, Turkey, and Portugal. The trade balance in the Oceanic and African markets is favorable to the United States. The leading non-European countries in which the balance of trade is unfavorable to the United States are Cuba, China, Japan, British East Indies, Asiatic Turkey, Egypt, Costa Rica, Guatemala, Honduras, Brazil, and the leading countries of South America, with the exception of Argentina and Uruguay.

EXPRESS COMPANIES

The total mileage covered by the lines of the 13 leading express companies (Adams, American, Canadian, Canadian Northern, Globe, Great Northern, National, Northern, Pacific, Southern, United States, Wells, Fargo & Company, and Western Express Companies) in 1911 was 270,666 miles; in 1910, 258,129; and in 1909, 260,507. The total cost of their real property and equipment was \$25,325,669 in 1910 as compared with \$22,313,576 in 1909. Their total gross receipts from operation in 1911 were \$152,555,522, as compared with \$146,116,316 in 1910, and \$132,599,190 in 1909. Their operating revenues in 1911 were \$78,599,072, and in 1910, \$76,198,754; operating expenses, \$67,070,637 in 1911 and \$61,690,473 in

1910; other income \$6,309,355 in 1911 and \$5,633,792 in 1910; gross corporate income \$16,535,707 in 1911 and \$19,025,874 in 1910; and net corporate income \$15,367,572 in 1911 and \$17,988,557 in 1910.

Of the total operating expenses in 1910, \$2,932,566 was for maintenance, \$915,029 for traffic expenses, \$53,321,742 for transportation expenses, and \$4,521,136 for general expenses. Similar data for the year 1911 are not yet available. The total number of express offices on June 30, 1911, was 29,323; 1910, 28,662; and 1909, 27,348.

The following table shows the principal statistical items for each of the 13 leading companies in the fiscal year 1911:

STATISTICS OF THIRTEEN LEADING EXPRESS COMPANIES, 1911.

COMPANY	Gross Receipts from Operation	Express Privilege	Operating Revenues	Operating Expenses	Net Corporate Income	No. of Offices in United States
Adams.....	\$32,855,185	\$17,083,832	\$15,771,354	\$14,271,042	\$2,825,489	5,895
American.....	41,683,196	19,372,526	22,310,670	18,996,798	4,416,008	7,212
Canadian.....	2,689,698	1,281,557	1,408,141	1,111,116	261,645	.....
Canadian Northern...	466,088	178,975	287,113	154,924	130,691	.....
Globe.....	700,430	350,332	350,097	324,337	195,751	198
Great Northern.....	2,602,148	1,555,983	1,046,165	778,878	228,791	784
National Express.....	1,232,275	477,515	754,760	609,373	139,659	216
Northern Express.....	3,164,531	1,647,427	1,517,104	1,056,703	433,441	698
Pacific.....	5,824,978	2,765,023	3,059,935	2,401,606	621,014	.....
Southern.....	14,932,794	7,233,559	7,699,235	5,820,839	1,911,588	3,973
United States.....	20,364,074	9,717,523	10,646,551	10,142,498	750,821	4,734
Wells Fargo.....	25,167,228	11,796,021	13,371,407	10,995,792	3,489,893	5,100
Western.....	872,696	496,177	376,519	406,733	137,218	513
Total.....	\$152,555,522	\$73,956,450	\$78,599,072	\$67,070,637	\$15,367,572	29,323

¹ Debit.

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Tonnage statistics for the year 1911 are not yet available. In the fiscal year 1910, however, the 13 leading express companies issued money orders valued at \$124,960,285; travelers' cheques valued at \$30,213,900; C. O. D. checks valued at \$55,878,805; telegraphic transfers valued at \$1,542,925; letters of credit valued at \$2,320,074; and miscellaneous financial paper valued at \$208,415,976.

On June 8, 1912, the Interstate Commerce Commission, having completed an exhaustive investigation into the express business, handed down a very important decision relative to express companies (Interstate Commerce Commission Opinion No. 1967). The Commission found existing rates in many instances to be exorbitant and discriminatory and express tariffs unduly complicated. It

therefore promulgated a new and simplified method of stating rates under which the country is divided into 950 blocks of 69 miles in length and from 62 to 45 miles in width, and the express rates are stated between these blocks instead of between cities. The system effects an average reduction of about 15 per cent. in the express rates throughout the United States. The Commission also reclassified express traffic into two classes, made direct through routes compulsory, required the publication and filing of a statement showing terminal services, and promulgated a system of labels to avoid double collections. The express companies were given an opportunity to show cause on Oct. 9, 1912, why the proposed rates shall not go into effect as ordered by the Commission.

THE POST OFFICE

The aggregate mail services of the United States in operation on June 30, 1911, are summarized in the following table:

SERVICE	Number	Aggregate Length (Miles)	Annual Travel (Miles)	Annual Rate of Expenditure
Star routes ¹	12,733	164,399.27	85,393,851.96	\$6,936,507.97
Star service in Alaska.....	22	4,248.	214,807.	196,896.93
Special office routes ¹	1,341	16,310.94	3,266,931.72	37,332.88
Steamboat service.....	226	29,283.91	5,203,866.38	758,109.88
Railroad routes.....	3,378	223,899.91	449,654,863.96	46,172,472.93
Railway post office cars.....				4,737,788.75
Railway mail service (officers and clerks).....	17,028			20,152,904.18
Mail-messenger routes.....	7,739	5,128.51	11,907,878.06	1,591,676.97
Wagon routes (in cities).....	290	1,127.24	5,177,816.92	1,643,332.70
Electric and cable car routes..	547	7,347.44	11,525,267.47	681,073.72
Pneumatic-tube routes.....	6	54.4492		925,636.40
Mail equipment.....				428,153.04
Freight on mail bags, postal cards, etc.....				401,598.19
Miscellaneous expenses.....				291.75
Total inland service.....	26,282	451,799.6692	572,344,782.47	\$84,663,776.29
Foreign Mails:				
Aggregate cost.....			\$3,519,036.26	
Less intermediary service...			314,436.09	
To foreign countries.....				3,204,600.17
Total.....				\$87,868,376.46

¹ Consolidated with rural mail delivery service under the Fourth Assistant Postmaster General.

As compared with the preceding year, the total number of routes decreased by 179 and the length of routes increased by 3,801 miles. The star routes and special office route services were consolidated with the rural mail delivery service everywhere except in Alaska. The total

number of miles traveled during the year increased by 19,031,783 miles, and the increase in the rate of expenditure was \$3,046,640. There was a decrease in the length of star routes and city wagon routes, but an increase in the length of other mail services.

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Cost of Postal Service.—The total amount paid to the railroads in 1911 was \$50,583,123, as compared with \$49,405,311 in 1910; to other means of transportation \$13,175,366, as compared with \$12,534,500; and for the transportation of the foreign mail,

\$3,315,349, as compared with \$3,204,130.

The total revenue, expenditures and deficit or profit of the post office since 1900, as reported by the Post Office Department, are shown in the following table:

YEAR	Postal Revenues	Postal Expenditures	Deficit
1900.....	\$102,354,579	\$107,740,267	\$5,385,688
1905.....	152,826,585	167,399,169	14,572,584
1906.....	167,932,782	178,449,778	10,576,996
1907.....	183,585,006	190,238,288	6,653,282
1908.....	191,478,663	208,351,886	16,873,223
1909.....	203,562,383	221,004,103	17,441,720
1910.....	224,128,658	229,977,225	5,848,567
1911.....	237,879,823	237,648,926	230,897 ¹

¹ Excess.

The total expenditures reported in 1911 were \$237,648,926; and the total revenues \$237,879,823, showing an excess of receipts of \$230,897, as compared with a deficit of \$5,848,567 in 1910 and \$17,441,720 in 1909. For the first time since 1883, there has been an annual postal surplus. The official statement of revenues and ex-

pensitures is criticised in that the latter make no allowance for interest charges on certain post office properties, but in any event, they show a marked improvement in the financial condition of the post-office service.

The increase in the annual expenditures is distributed among the various services as follows:

	1900	1905	1910	1911
Service in post office.....	\$51,214,498	\$73,944,920 ¹	\$107,770,710 ¹	\$112,898,369
Railway mail service.....	8,839,767	13,289,368	19,389,414	20,106,909
Rural delivery service.....	420,499	20,824,269	37,073,733	37,145,757
Railway mail pay.....	37,315,724	45,040,564	49,405,311	50,583,123
Other means of transportation..	7,794,212	11,302,795	12,534,501	13,175,366
Transportation foreign mail.....	2,155,567	2,832,432	3,204,130	3,315,349

¹ Accounts as revised in 1911.

Improvement in Organization and Methods.—Among the principal improvements made since the last report (AMERICAN YEAR BOOK, 1911, p. 547) are the following: (1) An investigation of the cost of railway mail pay; (2) the transportation of certain periodicals as second-class matter by fast freight trains; (3) the discontinuance of the Division of Inspection, and the transfer of its work to other divisions; (4) the establishment of the Division of Miscellaneous Transportation; (5) the establishment of a system for the separation of second-class mail matter by publishers; (6) the improvement of car equipment; (7) the adoption of a lighter mail sack for certain classes of mail matter; (8) the adoption of improved accounting methods and a better system of keeping stamp

accounts; (9) the adoption of a simplified international money-order form; (10) direct shipment of supplies from contractor to post offices; (11) shipment of packages weighing over 50 lb. by freight; and (12) the adoption of an improved mechanical facing table for large post offices.

The number of post offices in the United States was again reduced as a result of the extension of the rural mail delivery service, from 59,580 on June 30, 1910, to 59,237 on June 30, 1911.

Postal Savings System.—The postal savings system, which was installed at one post office in each state and territory on Jan. 3, 1911, has been extended so as to include nearly all of the 7,500 presidential post offices. Preparations are being made, moreover, to open depositaries in

about 40,000 fourth-class offices doing a money-order business. After two years' operation, the deposits at the various depositories have reached a total of about \$26,000,000. (See also XIV, *Banking*.)

The Parcels Post.—In an Act approved Aug. 24, 1912, Congress authorized the establishment of a domestic parcels post system. Beginning on Jan. 1, 1913, the post office will accept parcels of fourth-class mail matter, not exceeding 11 lb., in weight and not greater in size than 72 in. in length and girth combined. Fourth-class mail matter is defined to include all other matter, including farm and factory products, not now embraced in first, second or third class. The United States is divided into eight zones, and the parcels post rates from any given point are graded from 5 cents for the first pound or fraction and 3 cents for each additional pound or fraction, to 12 cents for the first pound or fraction, and 12 cents for each additional pound or fraction, according to the zone to which the parcels are shipped. The zones are arranged according to their distance from the units of area into which the country is divided, the units of area being 30 minutes square. The first zone includes all territory in such a unit of area in conjunction with every contiguous unit of area, representing an area having a mean radial distance of approximately 50 miles from the center of any given unit of area. The second zone in-

cludes all units of area outside the first zone lying wholly or in part within a radius of approximately 150 miles from the center of a given unit of area. The third zone extends this distance to 300 miles, the fourth to 600, the fifth to 1,000, the sixth to 1,400, the seventh to 1,800, and the eighth includes all units of area outside the seventh zone.

The rates on parcels mailed at post offices on rural routes for delivery on such routes, or at post offices with a city carrier system for delivery in such city, will be 5 cents for the first pound or fraction, and one cent for each additional pound or fraction of a pound.

Miscellaneous Legislation.—The above Act, approved Aug. 24, 1912, provided further that periodical publications issued at least four times annually by a benevolent or fraternal society or order having a membership of at least 1,000 persons, or by an incorporated or state institution of learning, or trades union, or by strictly professional, literary, historical or scientific societies, shall be classed as second-class matter and be permitted to carry advertising matter. A joint committee of Congress was appointed to inquire into the subject of federal aid in the construction of post roads (see also X, *Highways*). After July 1, 1917, all full railway post-office cars in use must be steel or steel under-frame cars, or be constructed of equally durable material.

TELEGRAPH AND TELEPHONE COMPANIES

The latest official returns covering the entire telegraph and telephone system of the United States are the census returns of 1907 (*AMERICAN YEAR BOOK*, 1910, p. 534). Current returns of the leading individual companies show a further increase in earnings, capitalization and consolidation, and an extension in service.

Telegraphs: The Western Union.—The principal business operations of the Western Union Telegraph Co., which largely controls the telegraph business of the United States, are shown in the following table:

	1910	1911
Stock issued.....	\$99,817,100	\$99,817,100
Funded debt.....	40,572,000	40,584,000
Miles of wire.....	1,429,049	1,487,345
Offices.....	24,825	24,926
Messages.....	75,135,405	Not reported
Gross earnings...	33,889,203	35,478,793
Expenses.....		30,053,632
Net revenue.....	7,274,900	7,105,357
Interest, etc.....	1,687,830	1,733,390
Net profits.....	5,587,070	5,371,968
Cash dividends...	2,989,696	2,991,304
Surplus for year...	2,597,374	2,380,663

The Postal.—The principal operations of the Mackay Companies, a voluntary association of many allied telegraph companies, which controls

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the Commercial Telegraph Cable Co., and through it the system known as the Postal Telegraph, are as follows:

	Year Ending Feb. 1, 1911	Year Ending Feb. 1, 1912
Common stock...	\$41,380,400	\$41,380,400
Preferred.....	50,000,000	50,000,000
Income from investments in other companies	4,128,491	4,125,907
Operating expenses.....	32,092	37,194
Balance.....	4,094,399	4,088,713
Dividends.....	4,069,020	4,069,020
Surplus for year..	27,379	19,693

The Mackay Companies have no funded debt of their own, but the Commercial Cable Co., its subsidiary, has a bond issue of \$20,000,000 outstanding.

Telephones: The American Bell.—The American (Bell) Telephone and Telegraph Co., the dominant telephone company in the United States, has again acquired additional telephone concerns and largely extended its service. The arrangement made with the Western Union Telegraph Co. for the joint use of telegraph and telephone facilities was declared illegal in New York, as a discrimination against other telegraph companies.

Its operations during the years 1910 and 1911 were as follows:

	1910	1911
Capital stock....	\$263,335,600	\$320,949,709
Funded debt.....	116,941,000	98,459,000
Stations.....	5,882,719	6,632,625
Miles of wire.....	11,642,212	12,932,615
Total earnings....	35,358,328	36,970,229
Net earnings.....	31,933,214	33,301,245
Net income.....	26,855,893	27,733,265
Dividends.....	20,776,822	22,169,450
Surplus for year..	6,079,071	5,563,815

¹ Including stations of local, co-operative and rural independent lines associated with or acting as connecting lines.

The combined operations of the entire Bell system, including subsidiaries (except the Western Union Telegraph Co.), and excluding all duplications, are shown in the following table for the fiscal years ending Dec. 31, 1910 and 1911:

	1910	1911
Capital stock....	\$344,645,400	\$379,727,832
Bonded debt.....	224,791,700	241,032,822
Gross earnings....	165,612,900	179,477,998
Operating expenses and taxes	62,590,500	69,051,347
Maintenance and depreciation...	52,028,000	58,840,354
Net earnings.....	50,994,400	51,586,297
Interest.....	11,556,900	13,610,860
Net income.....	39,437,500	37,975,437
Dividends.....	25,160,800	25,966,876
Surplus for year..	14,276,700	12,008,561

For returns of independent telephone companies, see AMERICAN YEAR BOOK, 1911, p. 549, no complete returns for 1911 being available.

RAILROADS

Physical Condition and Services.—On June 30, 1911, the single track mileage of all American railroads was 246,124.40 miles, an increase of 3,685.56 miles over the mileage of the

previous year. There were 61,327 locomotives in the service of the railroads, or 2,380 more than in 1910; and 2,359,335 cars, 69,004 more than in 1910; 2,195,511 of the cars were in

OPERATING REVENUES

	1910	1911	Percentage of Total Operating Revenues, 1911
Freight revenue.....	\$1,925,553,036	\$1,925,950,887	69.0
Passenger revenue.....	628,992,473	657,638,291	23.3
Mail revenue.....	48,913,888	50,702,625	1.9
Express revenue.....	67,190,922	70,725,137	2.6
Excess baggage revenue and milk revenue (on passenger trains).....	14,733,680	15,430,683	0.6
Parlor and chair car revenue and other passenger-train revenue.....	4,412,973	5,274,450	0.2
Switching revenue.....	26,367,214	27,665,997	1.0
Special service train revenue and miscellaneous transportation revenue.....	8,858,215	9,479,809	0.4
Total revenue from operations other than transportation.....	23,778,637	24,707,757	0.9
Unclassified.....			
Joint facilities revenue—Dr.....	572,875	647,247	0.0
Joint facilities revenue—Cr.....	2,439,272	2,833,280	0.1
Total.....	\$2,750,667,435	\$2,789,761,696	100.00

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the freight service; 49,818 in the passenger; and 114,006 in company service. The total number of employees was 1,669,809, or 29,611 less than the number of a year before.

During the fiscal year 1911, the railways carried 997,409,882 passengers, as compared with 971,683,199 in the previous year. The total freight carried, including freight received from connections, was 1,781,637,954 tons, a decrease of 68,262,147 tons, as compared with 1910. The original tonnage of all American lines, not in-

cluding freight received from connections, is not yet known for 1911; in 1910 it aggregated 968,464,009 tons.

Operating Revenues.—The revenues received from the various services performed in the fiscal years 1910 and 1911 are given on the preceding page. The total operating revenues in 1911 exceeded those of the previous year by \$39,094,234.

Operating Expenses.—The operating expenses incurred in the handling of the above traffic in 1910 and 1911 were:

OPERATING EXPENSES

	1910	1911	Percentage of Total Operating Expenses, 1911
Maintenance of way and structures.....	\$368,507,102	\$366,025,262	19.1
Maintenance of equipment.....	413,109,929	428,367,306	22.4
Traffic expenses.....	55,912,620	59,166,364	3.1
Transportation expenses.....	916,614,826	987,382,108	51.5
General expenses.....	68,485,956	73,689,376	3.9
Unclassified.....		423,592	0.0
Total.....	\$1,822,630,433	\$1,915,054,005	100.00

The net operating revenue during 1911, therefore, was \$874,707,664, as compared with \$928,037,002 in 1910. Adding to this the revenue from "outside operations" (\$63,093,052), and deducting the expenses incurred in outside operations (\$61,277,859), shows the "total net revenue" to be \$876,522,857, as compared with \$930,262,457 in the previous year. Subtracting from this the taxes accrued (\$102,657,157) shows the total "operating income" to be \$773,865,700, as compared with \$832,227,864 in 1910. Other income, that is, income from investments, etc., amounted to \$308,-

881,892 in 1911, giving a "gross corporate income" of \$1,082,747,592. After making the necessary "deductions from gross corporate income" (i. e., interest, rentals, etc.), the "net corporate income" is shown to be \$491,111,067. This is \$25,483,655 less than the net corporate income of 1910.

Capitalization.—The total capitalization of railways on June 30, 1911, was \$19,208,935,081 (par value), or \$791,802,843 in excess of the capitalization on June 30, 1910. The assignment of total capitalization for 1910 and 1911 is as follows:

CAPITALIZATION

CLASSES OF SECURITIES	1910	1911
Common stock.....	\$6,710,168,538	\$7,074,917,501
Preferred stock.....	1,403,488,842	1,395,800,052
Mortgage bonds.....	7,408,183,482	7,825,269,102
Collateral trust bonds.....	1,153,499,846	1,183,766,188
Plain bonds, debentures, and notes.....	933,966,704	951,377,816
Income bonds.....	290,951,276	261,777,220
Miscellaneous obligations.....	163,531,972	195,430,395
Equipment trust obligations.....	353,341,578	319,596,749
Total capital.....	\$18,417,132,238	\$19,208,935,081

Dividends.—The total amount paid in dividends in 1911 was \$460,195,376, or 8.03 per cent. on dividend-paying stock; 32.35 per cent. of the outstanding stock, however, paid no dividends. In the previous year, \$405,771,416 was paid in dividends, or 7.50 per cent on the dividend-pay-

ing stock; and 33.29 per cent. paid no dividends.

Railroad Consolidation.—There were relatively few important changes in the financial control of railways during the past year. The shift in the control of certain lines, however, and the change in the mileage of many

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of the constituent lines of the various systems makes it necessary to reconstruct the table of railway systems contained in previous issues of the YEAR BOOK. The leading systems may now be grouped as follows:

SYSTEMS	Mileage	
	1911	1912
I. VANDERBILT INTERESTS:		
Boston and Albany...	392	392
New York Central...	3,591	3,597
Lake Shore & Michigan Southern...	1,663	1,775
Michigan Central...	1,805	1,817
New York, Chicago & St. Louis...	561	563
Lake Erie & Western...	886	886
Big Four...	1,979	2,012
Pittsburgh & Lake Erie...	215	215
Chicago, Indiana & Southern...	329	359
Other affiliated Eastern lines...	1,759	1,296
Toledo & Ohio Central...	444	441
Western Maryland ¹ ...	575	543
Chicago & Northwestern...	9,827	9,800
	24,026	23,696
II. PENNSYLVANIA RAILROAD INTERESTS:		
Pennsylvania Lines...	11,197	11,235
Norfolk & Western...	1,990	2,018
	13,187	13,253
III. MORGAN INTERESTS:		
Erie Railroad...	2,565	2,557
Pere Marquette...	2,334	2,330
Southern Railway System...	8,667	8,640
Cincinnati, New Orleans & Texas Pacific...	335	377
Mobile & Ohio...	1,114	1,114
Atlantic Coast Line System...	6,818	6,865
Louisville & Nashville...	4,590	4,728
Chicago & Great Western...	1,495	1,496
	27,918	28,107
IV. GOULD INTERESTS:		
Wabash System...	2,663	2,628
Wheeling & Lake Erie...	457	457
Missouri Pacific ² ...	3,920	3,918
St. Louis, Iron Mountain & Southern ³ ...	3,313	3,315
St. Louis South Western ⁴ ...	1,675	1,744
Texas & Pacific ⁵ ...	1,991	1,991
International & Great Northern ⁶ ...	1,159	1,160
Denver & Rio Grande ⁷ ...	2,778	2,773
Western Pacific...	979	935
	18,935	18,921
V. MOORE INTERESTS:		
Rock Island System...	8,144	8,172
Delaware, Lackawanna and Western System ⁸ ...	1,052	1,081
Lehigh Valley ⁹ ...	1,431	1,449
	10,627	10,702

SYSTEM	Mileage	
	1911	1912
VI. HARRIMAN INTERESTS:		
Oregon Short Line...	1,646	1,762
Oregon Railway & Navigation Co.	1,737	1,920
Union Pacific System (remainder).....	3,791	3,871
Southern Pacific System.....	10,257	10,373
Illinois Central System	6,340	6,332
Central of Georgia....	1,915	1,915
Baltimore & Ohio System.....	4,555	4,510
Delaware & Hudson...	875	891
San Pedro, Los Angeles & Salt Lake...	1,105	1,137
Cincinnati, Hamilton & Dayton.....	1,115	1,015
Chicago & Alton.....	.....	1,026
	33,236	34,752
VII. HILL INTERESTS:		
Great Northern.....	7,397	7,482
Northern Pacific.....	6,281	6,387
Chicago, Burlington & Quincy.....	10,443	10,584
Colorado & Southern..	1,249	1,128
	25,370	25,581
VIII. EBB-YOCUM INTERESTS:		
Minneapolis and St. Louis and Iowa Central.....	1,586	1,586
Toledo, St. Louis & Western.....	451	451
Frisco System.....	7,471	7,547
Chicago & Alton.....	1,025	.....
Chesapeake & Ohio System.....	2,232	2,289
Missouri, Kansas & Texas.....	3,393	3,399
Hocking Valley.....	350	353
New Orleans, Mobile & Chicago.....	.....	547
	16,508	16,172
IX. NEW HAVEN INTERESTS:		
New York, New Haven & Hartford.....	2,041	2,091
Boston & Maine.....	2,241	2,244
New York, Ontario & Western.....	546	566
Maine Central.....	1,180	1,204
Central New England..	277	277
Rutland Railroad.....	.....	468
Other lines.....	196	196
	6,481	7,046
X. ATCHISON, TOPEKA & SANTA FE SYSTEM.....	10,472	10,800
XI. CHICAGO, MILWAUKEE & ST. PAUL SYSTEM.....	9,657	9,737
XII. SEABOARD AIR LINE SYSTEM.....	3,084	3,158
XIII. PHILADELPHIA AND READING.....	2,137	2,170
Grand Total of above groups and systems.	201,638	204,095

¹ Jointly with Gould Interests.

² Jointly with Rockefeller, Kuhn, Loeb and Co., Vanderbilt, and other interests.

³ Jointly with Standard Oil interests.

⁴ Jointly with Eric, Reading, and Vanderbilt interests.

The total mileage of the 13 groups is 204,041 as compared with a revised total of 201,638 in 1911 and 195,579 in 1910. Aside from the changes in mileage, which are clearly shown in the table, the following are among the leading changes of the past year:

(1) Judge Lovett, Chairman of the Executive Committee of the Union Pacific and some of his associates were placed on the board of directors of the Chicago & Alton. They were entrusted by a majority of the stockholders with the selection and direction of the management of the Chicago & Alton, thus indicating the control of Harriman interests.

(2) On May 6, 1911, the Illinois Central purchased the Indianapolis & Southern Railroad.

(3) On October 13, 1911, the chairman of the Frisco System confirmed the announcement that his company had acquired a controlling interest in the New Orleans, Mobile and Chicago Railroad Company, thus adding 547 miles to the Erb-Yocum group of railroads.

(4) On May 9, 1912, the New York Public Service Commission, second district, granted permission to the New York, New Haven and Hartford to purchase the majority interest in the Rutland Railroad, previously held by the New York Central.

(5) Under approval of the Massachusetts Railroad Commission, the Boston and Maine (New Haven interests), on Aug. 1, 1911, purchased 2,800 shares of stock in the Boston and Lowell Railroad, which had previously been operated under lease.

(6) Under approval of April 9, 1912, of the New York Public Service Commission, second district, the New York Central (Vanderbilt) purchased the stock of the Rome, Watertown and Ogdensburg Railroad Company, and the stock of the Utica and Black River Railroad not owned by the Rome, Watertown and Ogdensburg. The commission on April 3, 1912, refused to permit the purchase of the stock of the New York, Ontario and Western.

(7) On Nov. 25, 1912, the stockholders of the Big Four voted on the purchase of the Cairo, Vincennes and Chicago Railroad Company, the Cin-

cinnati and Springfield Railway Company, the Columbus, Springfield and Cincinnati Railway Company, the Findley Belt Railway Company, the Harrison Branch Railway Company, and the Indianapolis and St. Louis Short Line Railway Company.

(8) In June, 1912, a large block of stock of the Seaboard Air Line was purchased by S. Davies Warfield and associates representing important financial interests in the South and in New York. The announcement is made that the railway will continue to be operated as an independent southern line. In July, 1912, the Seaboard Air Line acquired control of the Tampa Northern Railroad, a line 50 miles long and now constructing an extension of 35 miles.

(9) In Nov., 1911, the Norfolk and Southern, considered to be an independent line, acquired the entire capital stock of the Aberdeen and Ashboro Railway Company, Durham and Charlotte Railroad Company, and Raleigh and Southport Railway Company, operating a combined mileage of 228 miles, with 25 miles under construction.

(10) On April 5, 1912, the Pere Marquette Railroad went into the hands of a receiver. While its future control is uncertain, it is still regarded as a Morgan line.

Car Demurrage Bureaus.—The number of car demurrage bureaus which declined from 40 in 1910 to 28 in 1911, has undergone a further decline to 23 in Oct., 1912. Five additional bureaus were disbanded, the carriers having adopted the policy of administering demurrage charges as individual lines. The disbanded bureaus were the Southern Demurrage and Storage Bureau, Memphis Demurrage and Storage Bureau, Michigan Car Demurrage Bureau, Indiana Car Demurrage Bureau, and Missabe Range Car Service Association.

The demurrage bureaus at present (Nov. 1, 1912) are the following:

Virginia and West Virginia Demurrage Bureau.
North Carolina Demurrage Bureau.
Southeastern Demurrage Bureau.
Alabama Demurrage and Storage Bureau.
Tennessee Demurrage and Storage Bureau.

East Tennessee Demurrage and Storage Bureau.
 Louisville Demurrage and Storage Department.
 Chicago Demurrage Bureau.
 Illinois and Iowa Demurrage Bureau.
 Wisconsin Demurrage Bureau.
 Lake Superior Car Service Association.
 Northern Demurrage Bureau.
 Central Demurrage and Storage Bureau.
 Missouri Valley Demurrage and Storage Bureau.
 Western Demurrage Bureau.
 Texas Car Demurrage and Storage Association.
 Colorado Demurrage Bureau.
 Intermountain Demurrage Bureau.
 Montana Demurrage Bureau.
 Pacific Car Demurrage Bureau.
 Pacific Northwest Demurrage Bureau.
 Canadian Car Service Bureau (British Columbia Branch)
 Canadian Freight Association.

Accounts and Reports.—During the year the Interstate Commerce Commission took the final step in rounding out a system of accounts for steam railroads by promulgating the "Form of Income and Profit and Loss Statement for Operating Steam Roads." It also promulgated the "Form of General Balance Sheet Statement for Express Companies" and the "Regulations to Govern the Issuing and Recording of Passes of Steam Roads."

The system of accounts for water-line carriers, referred to in the previous year, was not enforced, as the United States Circuit Court in *Goodrich Transit Co. v. the Interstate Commerce Commission* stayed the order of the commission and the Commerce Court permanently enjoined its enforcement. The U. S. Supreme Court, however, has since overruled the Commerce Court and upheld the Commission.

The Bureau of Statistics and Accounts of the commission was separated into two divisions—the Division of Statistics and the Division of Carriers Accounts. The former now deals with the computation and publication of statistics, and the latter with the formulation of accounting rules and classifications, the general examination of the accounts of carriers, and the conducting of special examinations and investigations.

Besides promulgating the above-mentioned accounting rules and

forms, the Division of Accounts examined the accounts of a number of railroads. It also conducted special examinations in the offices of the larger trunk lines, into the operations of express companies and of industrial railroads. It is now making an investigation of switching and terminal railways.

Railroad Accidents.—According to the report of the Interstate Commerce Commission, submitted to Congress on Dec. 16, the number of casualties on steam roads in the year ended June 30, 1912, was 180,123, in which 10,585 persons were killed and 169,538 injured. These figures indicate an increase over the previous year of 189 killed and 19,379 injured. Of the total of casualties, 400 railway employees were killed and 92,363 injured through "industrial accidents"—happenings incidental to railroad business, but not due to the operation of trains.

An analysis of the figures supplied by the steam roads showed that of the number of persons killed, 318 were passengers, 3,635 employees, and 6,632 other persons, trespassing or not trespassing, indicating an increase of 33 in the number of employees killed, a decrease of 38 in the number of passengers killed, and an increase of 194 in the number of persons killed other than employees and passengers. In the last class were many victims of grade crossings. Of the persons injured, 16,386 were passengers, 142,442 employees, and 10,710 other persons.

Recent Uniform Railway Practices.

—The movement toward the adoption of a uniform freight classification has continued during the current year. The National Association of Railway Commissioners recommended that a representative of the Interstate Commerce Commission be authorized to sit with the carrier's committee without vote, so as to insure more rapid progress. The Commission in its last annual report (1910) recommended the enactment of a law making uniform classification compulsory within five years from its passage.

A bill was introduced in the last session of Congress providing for the compulsory adoption of a uniform bill

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of lading in interstate traffic (Senate Bill 957). The bill passed the Senate on Aug. 21, 1912, but failed to become a law. (See also XIII, *Economic Conditions and the Conduct of Business*; and XIV, *Banking and Currency*.)

The Code of National Demurrage Rules approved by the Commission on Dec. 18, 1909, adopted by the American Railway Association on Jan. 27, 1910, and generally adopted by railroads on Nov. 1, 1910, were revised during the year. The American Railway Association adopted the revised rules on May 15, 1912.

Freight Rates.—Since the decision of the "freight rate cases" of 1911 (AMERICAN YEAR BOOK, 1911, p. 555), there has been no effort to bring about a general increase in freight rates. A great many rate cases, however, were decided by the Interstate Commerce Commission, in some suspending proposed increases, in some, directing reductions and readjustments, and in others sustaining the railroads. Some of the leading cases involving freight rates are cited below (under "Rulings of the Interstate Commerce Commission").

The average receipts per ton per mile, and per passenger per mile, for the railway system as a whole during the years 1900 to 1911 are shown in the following table:

YEAR	Receipts per Ton per Mile, cents	Receipts per Passenger per Mile, cents
1900.....	.729	2.003
1905.....	.766	1.962
1906.....	.748	2.003
1907.....	.759	2.014
1908.....	.754	1.937
1909.....	.763	1.928
1910.....	.753	1.938
1911.....	.757	1.974

In recent years the former has slightly increased, and the latter has slightly declined. Both, however, advanced slightly in 1911 as compared with the previous year.

FEDERAL LEGISLATION

The Panama Canal Act.—There has been no general amendment of the Interstate Commerce Act since June 18, 1910. The Panama Canal Act of Aug. 24, 1912, however, con-

tained various riders which alter the powers and duties of the Interstate Commerce Commission, and otherwise amend the Interstate Commerce Act. Section 11 prohibits railroads from operating vessels through the Canal over routes which compete or may compete with the vessel-owning, leasing, operating or controlling railroad. The Commission is authorized to determine questions of fact. This prohibition extends to common carriers other than those operating through the canal, unless they can show that railroad ownership is to the public interest and does not reduce competition over the water route under consideration.

Section 11 likewise extends the Commission's jurisdiction over interstate rail-water transportation through the canal or otherwise in the following particulars:

(1) The Commission may order the establishment of physical connection between railroads and the docks of water carriers, if such connection is practicable and safe and amount of business warrants the expenditure.

(2) It may establish through routes and maximum joint rates between and over such rail and water lines, and determine all the terms and conditions under which they shall operate in handling the traffic embraced.

(3) It may establish maximum proportional rates by rail to and from the ports to which the traffic is brought.

(4) If any rail carrier subject to the Interstate Commerce Act enters into arrangements with any water carrier operating from a port in the United States to a foreign country, for the handling of through business between the interior points of the United States and such foreign country the Interstate Commerce Commission may require such railroad to enter into similar arrangements with other steamship lines operating between said port to the same foreign country.

STATE LEGISLATION

Railroad Commissions.—There were but 14 regular and six special sessions of state legislatures during the year, and the volume of railway

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legislation was unusually small. The following table shows the number and types of railroad commissions now in existence:

Advisory Powers	Mandatory Powers over Railroads	Public Utilities Commissions	Corporation Commissions	No Commissions
Pennsylvania	Alabama Arkansas California Colorado Florida Illinois Indiana Iowa Kentucky Louisiana Maine Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada North Dakota South Carolina South Dakota Tennessee Texas	Georgia Maryland New Jersey New York Vermont Wisconsin Connecticut Kansas Ohio New Hampshire Oregon Rhode Island Washington	Arizona North Carolina Oklahoma Virginia	Delaware Idaho New Mexico Utah West Virginia Wyoming

There is but one commission with merely advisory and investigation powers; 24 railroad commissions have mandatory powers; 13 public utilities commissions have mandatory powers over railroads and other public-service corporations; and there are four corporation commissions. There are but six states and territories without any railroad commission.

The leading commission statute of the current year is the act creating a public utilities commission in Rhode Island (R. I. 1912, ch. 795). The commission of three is given jurisdiction over railroads, street railways and other common carriers and equipment companies, telegraph and telephone, gas, electric, water, lighting, heating and power companies doing a public business. Upon complaint or its own motion and after holding hearings, the commission may fix rates and fares, prescribe adequate and reasonable service, install safety devices, order changes and additions to plant and equipment, prevent unlawful discriminations and rebates; and supervise city franchises, contracts and ordinances.

The Maryland Public Service statute (Md. 1912, ch. 427) was restated in part so as to define more fully the commission's power with respect to the issue of securities. It may ap-

prove the issuance of securities by a new company organized by the purchasers of the franchises or property of another company; and may permit the capitalization of tangible and intangible property and assets other than a company's franchise to be a corporation. The legislature, moreover, changed the duties of the counsel of the commission (Md. 1912, ch. 563) and authorized the commission to order the issue of mileage, excursion, school and commutation passenger tickets, and interchangeable tickets (Md. 1912, ch. 162).

The New York Public Service Commissions were given power to supervise the reorganization of public-service corporations, and to control their capitalization during reorganization (N. Y. 1912, ch. 289). Their powers with respect to rapid transit construction, operation, maintenance, and routes were increased (N. Y. 1912, ch. 547); and miscellaneous matters relating to the organization, expenses, etc., of the commissions were subjects of legislation (N. Y. 1912, chs. 546-7).

Arizona has provided for the creation of a corporation commission of three members elected for a term of six years. Its scope and jurisdiction are based upon the corporation commission statute of Oklahoma. (Ariz.

Const., Art. XV). (See also XI, *Public Services*.)

Passenger Fare and Freight Rate Acts.—The New Jersey railways were authorized to issue free passes to the chiefs of police of municipalities in the state (N. J. 1912, ch. 191); and to grant reduced fares to clergymen (N. J. 1912, ch. 88). The Secretary of State was instructed to issue certificates showing what state officials are entitled to free railroad passes (N. J. 1912, ch. 115). The powers of the Maryland commission over mileage, excursion, commutation, etc., tickets are stated above.

New York railroads were authorized to carry trees for reforestation free of charge or at reduced rates (N. Y. 1912, ch. 444).

Public Safety Statutes.—Statutes regulating the elimination or protection of grade crossings were enacted in New Jersey (N. J. 1912, chs. 80, 412, 534 and 547), in Rhode Island (R. I. 1912, ch. 795), and in South Carolina (S. C. 1912, p. 791). In Maryland, shooting or throwing at cars, and throwing articles from cars was prohibited (Md. 1912, ch. 97). The Maryland commission was authorized to direct the installation of safety devices (Md. 1912, ch. 159). Statutes regarding locomotive headlights were enacted in South Carolina (S. C. 1912, p. 792), Arizona, and Mississippi. New Mexico fixed the hours of labor of train men and telegraphers; and Arizona legislated with respect to full train crews and experience; laws prohibiting trespassing were enacted in Arizona, Maryland and New Mexico. Statutes regarding the reporting of accidents were enacted in Maryland, Nevada, and Rhode Island (R. I. 1912, ch. 795).

Miscellaneous Laws.—The running of trains on Sundays was regulated in Georgia (Ga. 1912, pp. 76-77) and South Carolina (S. C. 1912, pp. 572-73); the use of cinder deflectors in Georgia (Ga. 1912, p. 157) and South Carolina (S. C. 1912, p. 777); the time of paying employees in Virginia (Va. 1912, ch. 106), Arizona, New Mexico and Louisiana; and track and platform scales and weighing, in South Carolina (S. C. 1912, p. 578). The matter of train stops was regu-

lated in Kentucky; passenger equipment in Georgia, Kentucky, Maryland, Massachusetts, Mississippi, and South Carolina; number of passenger trains to be run in Arizona; drainage and inspection of right of way in Louisiana; and shop equipment in Mississippi. The South Carolina statute with respect to the time of freight delivery was revised (S. C. 1912, p. 578). Steam railroads in Maryland were authorized to change their motive power (Md. 1912, ch. 517).

RULINGS OF THE INTERSTATE COMMERCE COMMISSION

Under the Interstate Commerce Act as amended in 1906 and 1910 the Interstate Commerce Commission during the fiscal year 1911 announced 507 formally instituted cases and dismissed 145 on stipulation of the parties or upon motion of complainants, 881 formal cases were filed with the commission during the year, and 12 were begun on its own motion; 43 proceedings of investigations and suspensions of tariffs were instituted; correspondence was had in 485 informal complaints, and 4,325 such complaints were filed with the commission, 5,653 claims were filed in the Special Docket Division, and orders were issued in 3,875 cases in this docket, 5,723 applications for relief from the long-and-short-haul clause were filed, and 450 orders were entered denying the relief asked for or prescribing the extent to which carriers may be relieved. The commission held 943 hearings of alleged violations of the interstate commerce act and for other purposes.

Among the principal decisions of the Interstate Commerce Commission during the year 1912 are the following:

(1) **The Tap Line Cases:** XXIII I. C. C. Repts. 277 (April 23, 1912); *ibid.*, 549 (May 14, 1912). On April 23, the Commission decided that the service performed for the proprietary lumber companies by certain tap lines described in the report is not a service of transportation by a common carrier. The commission held that there is no general rule with respect to tap lines, and that each case must stand on its own facts.

The common ownership of an industry and a short line serving it is not in itself sufficient to divest the railroad of its status as a common carrier. On the other hand, the fact that the rails, locomotives, and cars of an industry have been turned over to an incorporated railroad company owned and operated by the industry or in its interest does not divest those appliances of their character as a plant facility if such in fact is the case.

On May 14, 1912, the commission announced its findings as to the remaining tap lines considered in its investigation, and commented on certain irregularities and defects in their practices and tariffs.

(2) *City of Spokane et al. v. Northern Pacific Railway Co., et al.*: XXIII I. C. C. Repts. 454 (May 14, 1912); *Railroad Commission of Nevada v. Southern Pacific Co. et al.*: *ibid.*, 456 (May 15, 1912). Owing to the delay caused in the enforcement of the transcontinental rate decision of the Commission by an appeal to the Supreme Court, the question of reasonable rates to intermountain points and the application of the long-and-short-haul clause was again considered. The railroads agreed to put into effect tariffs of commodity rates somewhat higher than those ordered in the transcontinental rate decisions, as a temporary relief to shippers. The Commission saw no objection to the temporary arrangement, but refused to discontinue its proceedings or abandon its stand relative to the long-and-short-haul clause. Tariffs of reduced rates have been filed by the railways, but the matter will not be disposed of until after the findings of the Supreme Court, which assigned the cases for argument in October.

(3) *In re Pipe Lines*—XXIV I. C. C. Repts. 1 (June 3, 1912)—the Commission ordered certain pipe-line companies to file schedules of their rates and charges, on the ground that they are common carriers under the Interstate Commerce Act even though they were built over privately acquired right of way, transport their own oil, and place the ownership of the pipe line in a different corporation in each state.

(4) *In re the Investigation and Suspension of Certain Regulations*

and Practices with Regard to Pre-cooling and Pre-icing: XXIII I. C. C. Repts. 267 (April 8, 1912). Shippers have the right to pre-cool; \$7.50 is a reasonable charge to be made by the carriers for their service in this connection; and the tariffs withdrawing this charge are unlawful.

(5) *Colorado Coal Traffic Assn. v. Denver and Rio Grande R. R. Co., et al.*: XXIII I. C. C. Repts. 458 (May 6, 1912). The Commission applied its previously established views on car distribution to the situation in several coal mining districts of Colorado distribution to the situation in cease unfair discrimination and to formulate equitable car-distribution rules within 60 days.

(6) The "In Transit" Case: XXIV I. C. C. Repts. 340 (June 5, 1912). The Commission, upon discovering "gross violations of the law" in the matter of in transit privileges in the grain and mill products trade, prescribed a code of rules and practices which interstate railways will hereafter carry out.

(7) *In re Advances in Rates for the Transportation of Freight in Single Packages and Small Lots*—XXII I. C. C. Repts. 328 (Feb. 5, 1912)—the commission found unreasonable the proposed advances in the minimum charge on less-than-carload shipments in official classification territory from 25 to 35 cents.

Among the many decisions concerning the reasonableness of rates the following may be noted:

(8) *Livestock, Packinghouse and Fresh Meat Cases*: XXII I. C. C. Repts. 160 (Dec. 11, 1911); XXIII I. C. C. Repts. 656 (May 13, 1912); *ibid.*, 652 (May 13, 1912). On Dec. 11, 1911, the Commission prescribed maximum rates to replace existing rates on livestock from New Mexico, Texas, and Oklahoma to Fort Worth, Oklahoma City and Wichita; on fresh meat from Fort Worth, Oklahoma City and Wichita to various points; and on salt from the Kansas field to Oklahoma City. On May 13, 1912 (XXIII I. C. C. Repts. 652), upon finding that the mileage rates previously approved on fresh meats and packing house products shipped from Wichita, Oklahoma City and Fort Worth to points in Arkansas

and Louisiana resulted in an advance in many cases, the Commission ordered such mileage rates to be applied also on shipments from St. Louis and Kansas City to points in Arkansas and Louisiana. On the same day (XXIII I. C. C. Repts. 656) the Commission upheld the findings of Dec. 11, 1911, and prescribed rates between various points.

(9) Coal Rate Cases: XXII I. C. C. Repts. 604 (March 11, 1912); XXIII I. C. C. Repts. 134 (April 1, 1912); *ibid.*, 121 (April 1, 1912). The proposed increase in the rates on coal from West Virginia to Lake Erie ports for lake trans-shipment was found unreasonable in case of the C. & O., Kanawha and Michigan, and the B. & O.; but upheld in case of the Norfolk & Western (XXII I. C. C. Repts. 604).

The rate on coal from Clyde siding, Fredericktown, Pa., to Ashtabula harbor when for lake trans-shipment shall not exceed 78 cents per net ton (XXIII I. C. C. Repts. 135).

In XXIII I. C. C. Repts. 121, the Commission prescribed maximum rates on coal shipped from the Walzenberg district of Colorado to various points.

(10) *In re* the Investigation and Suspension of Advances in Rates on Cotton and Cotton Linters: XXIII I. C. C. Repts. 404 (May 6, 1912). Complaint had been made that the equality of rates on cotton from the interior of Texas to Texan ports and New Orleans was unfair to the Texan points, and the railroads had then proposed to increase the rates to New Orleans. These increased rates were temporarily suspended by the Commission, but, on May 6, 1912, were found to be reasonable.

(11) The Wool Case: XXIII I. C. C. Repts. 15 (March 2, 1912). The present rates on wool from the far West to eastern points were found to be unreasonable and maximum rates were prescribed for the future. The Commission decided further that the blanket rate system should be broken up in case of wool; that the rate on wool in bales should be lower than on wool in sacks; and that transit privileges should be allowed at intermediate points under certain restrictions. It classified wool under the

western classification; and granted relief from the operation of the long-and-short-haul clause in certain cases.

(12) *In re* the Investigation and Suspension of Advances in Rates by Carriers for the Transportation of Iron and Steel Articles—XXII I. C. C. Repts. 486 (Feb. 12, 1912)—the Commission suspended the general increase in the rates on iron and steel products as proposed by a group of trunk-line railways, and ordered the maintenance of the present rates.

(13) The Norman Lumber Co. *et al. v.* Louisville and Nashville R. R. Co. *et al.*: XXII I. C. C. Repts. 259 (Jan. 8, 1912)—the commission refused to change the present system of making rates on lumber from southern points to Ohio River crossings. It held that the present rates on hardwood lumber from the South do not subject Louisville to an undue disadvantage as compared with Cairo, or other Ohio River crossings.

(14) The Grain Rate Case: XXIV I. C. C. Repts. 96 (June 3, 1912). The commission denied the complaint as to unjust discriminations in lake-and-rail rate on grain products. It ruled, however, that the rates on grain from South Dakota, Minnesota, and Iowa to Duluth-Superior should not exceed the rates to Milwaukee or Chicago for equal distances, and that those to Milwaukee from portions of South Dakota, Minnesota, and Iowa should not exceed the rates to Duluth-Superior for equal distances; that the Great Northern differential on grain between Minneapolis and Duluth-Superior should not exceed three cents; and that the rates *via* the Soo Line, Northwestern-Omaha system or the Milwaukee system to Duluth-Superior *via* Minneapolis should not exceed the rates to Minneapolis more than four cents.

(15) The Express Rate Case. See *Express Companies, supra*.

LEADING COURT DECISIONS

(1) Atchison, Topeka and Santa Fe *et al. v.* United States; Union Pacific *et al. v.* United States.—(U. S. Commerce Court, Nov. 14, 1911). The Commerce Court enjoined the enforcement of the transcontinental rate cases of the Interstate Commerce

Commission, on the grounds that the Commission did not establish particular rates but established a "relation between any long-haul rate that the carrier may put into effect and the short-haul rate," and in this regard exceeded its legal authority. The case was appealed to Supreme Court.

(2) *Atlantic Coast Line et al. v. Interstate Commerce Commission.*—(U. S. Commerce Court, Dec. 5, 1911). Portions of the order of the Commission fixing rates between Boston and New York to Atlanta, Ga., were overruled on the ground that rates were prescribed without evidence being offered, heard or introduced, tending to show the existing rates to be unjust or unreasonable. The court held that the Commission can fix rates for the future only after full hearing.

(3) *Goodrich Transit Co. v. Interstate Commerce Commission.* (U. S. Commerce Court, Oct. 5, 1911; U. S. Supreme Court, June, 1912). The Commerce Court ruled that the Interstate Commerce Commission has no power to call for traffic reports from or prescribe a system of accounts for water-transportation companies as to their strictly port to port or intrastate business. The Supreme Court overruled the Commerce Court and upheld the Interstate Commerce Commission.

(4) *Proctor and Gamble Co. v. United States et al.* (U. S. Commerce Court, July 20, 1911; U. S. Supreme Court, June 7, 1912). The Commission was upheld in the contention that private cars are subject to demurrage charges. Upon appeal to the Supreme Court, the higher court upheld the Interstate Commerce Commission (June 5, 1912), but ruled that the Commerce Court erred in assuming that it had the right to review the decision of the Interstate Commerce Commission. The Commission had refused relief on the ground that the demurrage charges complained of did not violate the Interstate Commerce Act. The Supreme Court held that the Commerce Court does not have the power to act in cases in which the Interstate Commerce Commission refuses to act for lack of jurisdiction. The Commerce Court has the power to review an af-

firmative decision of the Commission, but not to exercise its own judgment by originally interpreting the administrative features of the Interstate Commerce Act.

(5) *Atchison, Topeka and Santa Fe et al. v. Interstate Commerce Commission* (U. S. Commerce Court, Oct. 5, 1911). The Commerce Court enjoined the enforcement of the order as to the rate on California lemons, on the ground that the Commission wrongfully assumed the authority to protect an industry against foreign competition.

(6) *Interstate Commerce Commission and the United States v. the Baltimore & Ohio* (U. S. Commerce Court, Feb., 1912; U. S. Supreme Court, June 7, 1912). In this, the "restricted rate case," the Commerce Court overruled the order of the Commission, denying the right of interstate railways to fix a lower rate on coal destined to be used as railway fuel than on coal destined to be used by other shippers. The Supreme Court overruled the Commerce Court and upheld the Commission.

(7) *Southeastern Rate Case* (U. S. Commerce Court, Oct., 1911; U. S. Supreme Court, June, 1912). Upon refusal of the Interstate Commerce Commission to make the full reduction in the maximum rates of from 76 cents to 60 cents between Cincinnati and Chattanooga, the shippers appealed the case to the Commerce Court. This Court took jurisdiction, but dismissed the case on its merits. Upon appeal, the Supreme Court denied that the Commerce Court has jurisdiction, and therefore remanded the case, as in the *Proctor v. Gamble* case.

(8) On Dec. 2 the Supreme Court handed down a decision holding illegal under the anti-trust law of 1890 the acquisition by the Union Pacific Co. in 1901 of the Huntington and Hawley interests in the Southern Pacific Co. The Union Pacific Co. is given 90 days in which to devise a plan for getting rid of its Southern Pacific stock.

STREET RAILWAYS

No complete official returns of the entire street-railway system in the United States have been published

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since the census report for 1907 (*AMERICAN YEAR BOOK*, 1910, p. 549). The latest unofficial returns for the entire system are those for the year 1910, as the *McGraw Electric Railway Manual* of 1912 does not contain compilations for later years (*AMERICAN YEAR BOOK*, 1911, p. 563). It reports, however, an increase in street-railway earnings. A group of ten larger companies had earnings of \$149,272,022 in 1911, as compared with \$139,547,722 in 1910. The earnings of a group of ten

smaller companies likewise increased from \$27,901,154 in 1910 to \$29,239,193 in 1911.

The *Electric Railway Journal* reports an increase of 1,191.58 in the mileage of the street railways during the calendar year 1911, as compared with 1,397.26 in the previous year. The total, unofficial mileage of the entire street railway system in 1910 was 40,088 miles, and by the end of the calendar year 1911 this had increased to approximately 41,280 miles.

INLAND WATERWAYS AND COASTWISE COMMERCE

Coastwise Trade.—No provision has as yet been made for the official reporting of the coastwise traffic, and complete returns therefore cannot be given. As in previous years, the largest item of tonnage on the Atlantic Coast was coal. The Bureau of

Statistics reports that in the calendar year 1911, 44,092,524 tons were shipped from the five leading terminals, as compared with a revised total of 42,078,407 tons in 1910. These shipments in long tons were distributed as follows:

COAL SHIPMENTS FROM ATLANTIC PORTS

Port	Anthracite	Bituminous	Total
New York.....	14,651,401	10,749,988	25,401,389
Philadelphia.....	2,197,750	4,856,626	7,054,376
Baltimore.....	257,025	4,002,809	4,259,834
Newport News.....	.....	2,678,156	2,678,156
Norfolk ¹.....	.....	4,698,769	4,698,769
Total.....	17,106,176	26,986,348	44,092,524

¹ Including Sewalls Point, Va.

The shipments increased at each of the five named terminals, except Newport News.

The coastwise shipments and receipts of lumber at Gulf and Atlantic ports during the year were heavy, but in the aggregate were lighter than in the previous year. The chief movement is from the southern ports, such as Brunswick, Jacksonville, Savannah, Georgetown, Norfolk, Newport News, Mobile and Charleston, to the markets of the North Atlantic.

The coastwise receipts of southern pine at New York afford an index of this lumber traffic; they show a decline from 459,534,815 ft. in the calendar year 1910 to 395,635,625 ft. in 1911. The total shipments of pine lumber from the south, rail as well as coastwise, were lighter than in the previous year. Though the shipments of pine lumber from Virginia and the Carolinas increased from 260,891,684 ft. in 1910 to 406,103,360

in 1911, according to the returns of the Bureau of Statistics, the total shipments of yellow pine from the entire South and Southwest declined from 4,950,481,825 ft. to 4,575,988,894 ft.

Owing to the increased cotton output in 1911 the coastwise movement of cotton was greater than in 1910, but the actual amounts so moved are not reported. In 1911, 8,659,570 barrels of petroleum were shipped from Port Arthur and Sabine, Texas, to Marcus Hook, Pa., Gretna, La., Bayonne, N. J., Delaware River Stations, Port Tampa, Fla., Philadelphia, Galveston, Gibson Point, Pa., and other coastwise receiving ports, as compared with 7,643,639 in 1910, and 7,773,123 in 1909. Other items of importance in the Atlantic and Gulf coast trade are fertilizers, phosphate rock, stone, sand, cement, brick, lime, railroad ties, poles, laths and shingles, wood and wood pulp and general

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merchandise, but complete current cargo statistics are not available. (See AMERICAN YEAR BOOK, 1910, p. 551, for summary of census figures of 1906.)

While complete data are not available, the coastwise movement at some of the larger ports is indicative that the total coastwise trade in 1911 was about equal to that of 1910. The coastwise interchange of merchandise between New York and New England ports in 1911 aggregated 2,020,977 short tons of freight each of shipments and receipts, as compared with 2,177,595 in 1910. The total number of coastwise ships arriving at Boston in 1911 was 10,240 with a gross tonnage of 11,905,887 tons, as compared with 9,991 vessels of 11,903,374 gross tons in the previous year. In 1911, 5,218 coastwise vessels arrived at New York, as compared with 5,614 in 1910. The coastwise arrivals at Philadelphia in 1911 totaled 4,955 of 4,439,851 net tons, while in 1910, 4,810 coast vessels of 4,231,147 net tons arrived. The coastwise arrivals at Baltimore in 1911 aggregated 1,402 vessels, of 2,056,387 net tons, as compared with 1,350 vessels of 2,046,991 net tons in 1910.

The leading items in the coastwise trade of the Pacific coast are logs and lumber, which are shipped in rafts, barges, steam schooners and steamers and sailing vessels from Puget Sound, Gray's Harbor, Portland, and upper California, chiefly to San Francisco, southern California, and Hawaii. Oil is shipped from southern California chiefly to Point Richmond, the port of Los Angeles, Portland, and Hawaii. Grain is shipped from Portland, Seattle and Tacoma to San Francisco; and a small amount of coal from Puget Sound.

The coastwise traffic on the Pacific coast was somewhat larger in the calendar year 1911 than in the previous year. The coastwise arrivals at San Francisco, which may be taken as an index, increased from 4,261,929 net tons in 1910 to 4,696,149 in 1911, and the departures grew from 4,500,716 net tons in 1910 to 5,014,176 in 1911.

One branch of the coastwise business of the United States that has increased rapidly during the last few years is the intercoastal traffic. The following table indicates the movement in tons of freight during the period 1906 to 1911:

VOLUME OF INTERCOASTAL WATER TRAFFIC, 1906-1911

YEARS	Total Line Traffic (excluding Hawaiian Sugar)	Total Tramp Vessel Traffic	Total Water Traffic (excluding Hawaiian Sugar)	Total Water Traffic (including Hawaiian Sugar)
1906.....	197,703	271,324	469,027	560,727
1907.....	188,044	239,638	427,682	625,982
1908.....	182,463	89,075	371,538	614,305
1909.....	359,010	75,195	434,205	682,305
1910.....	386,576	151,073	537,649	781,949
1911.....	669,817	138,318	808,135	1,104,735

The regular line traffic is now conducted by three lines on the Pacific Coast (American-Hawaiian Steamship Co., Pacific Mail, and California-Atlantic), and two on the Atlantic Coast (American-Hawaiian and Panama R. R. and Steamship Co.). The traffic handled by these lines has more than trebled during the last six years, while that handled by individual vessels, almost wholly *via* Cape Horn and Magellan, decreased more than 50 per cent. The line business in 1911 comprised 82.8 per cent. of the total coast-to-coast business. It

is expected that the line traffic, now transshipped *via* the Panama and Tehuantepec routes, will move through the Panama Canal and will greatly increase after the Panama Canal is completed.

Domestic Trade of the Great Lakes.—In the calendar year 1911, 74,311,019 tons of merchandise were shipped between the ports of the Great Lakes, as compared with 86,732,316 in 1910 and 80,974,605 in 1909. The following table shows the receipts and shipments of the leading classes of commodities in short tons:

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DOMESTIC TRADE OF THE GREAT LAKES

(Year ending December, short tons.)

	RECEIPTS		SHIPMENTS	
	1910	1911	1910	1911
Flour.....	1,169,111	1,150,497	1,171,327	1,152,807
Grain and flaxseed.....	2,782,193	3,112,939	3,030,702	3,462,225
Coal.....	22,576,635	21,445,654	24,680,941	23,148,301
Ore and minerals.....	47,947,635	35,943,426	47,963,657	35,947,875
Lumber.....	2,415,944	2,327,850	2,415,584	2,329,088
Unclassed.....	7,526,318	8,340,178	7,470,005	8,270,723
Total.....	84,414,636	72,320,544	86,732,316	74,311,019

The largest item by far is iron ore, of which 31,121,116 long tons were shipped in 1911 from Duluth, Two Harbors, Superior, Escanaba, Ashland, and Marquette, chiefly to Ashtabula, Conneaut, Cleveland, Chicago, Buffalo, Lorain, Fairport, Erie and Toledo. Twenty-three million one hundred and forty-eight thousand three hundred and one short tons of coal were shipped. Hard coal moves chiefly from Buffalo, Erie, and Oswego to Superior, Milwaukee, and Chicago; while soft coal chiefly from Toledo, Ashtabula, Cleveland, Lorain, and Sandusky to Milwaukee, Superior, Duluth, Manitowoc, and Chicago; 1,164,544 M. ft. of lumber moved mainly from Duluth, Manistique, and Manistee to Chicago, North Tonawanda, and Buffalo; 42,292,488 bus. of wheat were shipped chiefly from Superior, Duluth, and Chicago, to Buffalo, Chicago, Detroit, and Toledo; 47,149,095 bus. of corn chiefly from Chicago and Milwaukee to Buffalo, Ogdensburg, and Ludington; 27,562,921 bus. of oats, mainly from Manitowoc, Chicago, Milwaukee, Superior, Duluth, and Gladstone to Buffalo, Ludington, and Frankfort. The Lake trade also included 10,161,740 bus. of barley, and smaller quantities of rye and flaxseed; 1,052,807 short tons of flour were shipped chiefly from Milwaukee, Chicago, and Duluth to Buffalo, Erie, and Luding-

ton. Other leading items are pig iron, iron manufactures, salt, coffee, and package freight.

The decline in shipments from 86,732,316 short tons in 1910 to 74,311,019 in 1911 is due chiefly to a falling off in the ore and coal traffic. In contrast with the declining tonnage of these items was the increase in the yearly shipments of wheat and corn.

One index of Lake freight movements are the gateways between the lakes. In 1911, 53,477,216 short tons of freight passed through the Sault Ste. Marie canals, as compared with 62,363,218 in 1910 and 57,895,149 in 1909.

The distribution of the total Lake trade in 1911 by lakes is shown in the following table:

LAKE	Receipts (short tons)	Shipments (short tons)
Superior.....	12,636,028	33,793,987
Michigan.....	21,712,737	13,552,875
Huron.....	919,736	1,496,919
Erie.....	36,580,469	23,222,375
Ontario.....	471,574	552,017
Total.....	72,320,544	72,618,173

Commercial Movement on Rivers and Canals.—The following table shows the total traffic passing through the state canals of New York—the Erie, Champlain, Oswego, Cayuga and Seneca, and Black River canals, as reported by the United States Bureau of Statistics:

NEW YORK STATE CANALS

	TONNAGE ON NEW YORK STATE CANALS					Total Quantity	Total Value
	Erie	Cham- plain	Oswego	Cayuga and Seneca	All Others		
1900.....	2,145,876	972,867	31,742	130,126	65,330	3,345,941	\$84,123,772
1906.....	2,385,491	740,983	172,228	164,874	77,331	3,540,907	66,501,417
1907.....	2,415,548	678,506	143,277	112,670	58,013	3,407,914	63,903,970
1908.....	2,177,443	614,762	92,831	81,029	85,812	3,051,877	54,511,509
1909.....	2,031,307	732,125	121,717	84,957	146,430	3,116,536	59,081,572
1910.....	2,023,185	684,027	110,079	80,125	175,996	3,037,412	59,042,178
1911.....	2,031,735	770,668	113,891	98,854	81,920	3,039,068	49,577,629

The eastbound traffic of the Erie Canal consists mainly of grain, lumber, salt, stone, lime and clay; westbound it is mostly general merchandise. Northbound the Champlain Canal carries chiefly coal, stone, lime, clay, and ice; and southbound wood pulp, lumber, and iron ore. The traffic of the other New York canals consists mainly of farm produce, lumber, coal, and general merchandise. The tonnage of the Erie Canal has declined from 6,673,370 tons in 1872 to 2,031,735 in 1911, and the total tonnage of all the New York canals at present is less than three per cent. of the tonnage moving by rail. The aggregate tonnage in 1911 was slightly in excess of what it was in the previous year, and this increase was witnessed on each of the four chief links of the New York state system.

The tidewater coal canals, which constitute a second group, have shown no tendency in recent years to regain their former position in the coal trade. The Delaware and Raritan Canal carried 448,964 tons in 1910, as compared with 401,231 tons in 1909, as usual in recent years. About 400,000 tons, mainly of coal with certain quantities of iron and building materials, are annually shipped through the Lehigh Canal and the Delaware Division. Slightly over 50,000 tons are shipped through the Schuylkill Canal; about 88,000 through the Morris Canal, and the Delaware and Hudson has been abandoned. The traffic of all these canals has been declining within recent years. The Lehigh Canal and the Delaware Division are owned by the Lehigh Coal & Navigation Company; the Schuylkill Canal by the Philadelphia and Reading Railroad; the Morris Canal is leased perpetually to the Lehigh Valley Railroad, which has offered to present it to the state of New Jersey, and the Delaware and Raritan is leased to the Pennsylvania Railroad for 999 years.

The traffic of the Chesapeake and Delaware Canal, in spite of its small depth of 10 ft. with a vessel draft of 9 ft., has in recent years increased its traffic. In 1911, its cargo tonnage aggregated 914,175 tons; in 1910, 848,546; and in 1909, 816,037. In 1911 this canal moved 2,711 steam-

ers, 1,941 barges, 646 other vessels, and 9 rafts.

There were no changes * of importance in any of the remaining state, federal and private canals of the United States during the current year. The improvements now being made on the Erie Canal by the state of New York with a view of again making it a highway of importance have progressed. The agitation for construction of an inland route along the Atlantic coast so as to provide a sheltered waterway for the coastwise fleet—particularly barges—has continued. A six-mile cut from Pimlico Sound to the ocean has been completed, and Congress has provided for the improvement of the Chesapeake and Albemarle Canal. (See also X, *Waterways*.)

River Traffic.—On a number of American rivers considerable quantities of freight are annually carried by barges, steamers, rafts and gasoline boats. The United States Bureau of Statistics reports that in 1911 Lock No. 3 of the Monongahela River passed a down-stream traffic of 8,827,063 tons as compared with 9,138,196 in 1910, and Lock No. 1 an up-stream traffic of 1,338,522 as compared with 1,329,919 in the previous year. The total movement on the Monongahela in 1911 is reported at 10,714,357 short tons, compared with 10,896,030 in 1910, and 11,456,392 in 1909, consisting chiefly of coal, sand, and gravel, iron and steel goods. The Allegheny River annually carries considerable quantities of coal, gravel, sand, lumber, timber and stone. The United States Bureau of Corporations reports that annually about 20,000,000 tons are moved on the Ohio River and its tributaries, and 11,500,000 tons on the Ohio River proper. On the upper Ohio the traffic consists mainly of coal, logs, sand, gravel, and package freight; on the middle Ohio, coal, lumber and timber, grain, tobacco, and other farm products; and on the lower Ohio, coal, corn, wheat, groceries, livestock, flour and tobacco. Current annual tonnage statistics are not reported.

The United States Engineer Corps

* For length, depth and termini of leading state, federal and private canals see AMERICAN YEAR BOOK, 1910, p. 553.

reports a cargo tonnage of 5,393,317 short tons on the Willamette and lower Columbia Rivers for the calendar year 1910, consisting chiefly of grain, flour, lumber, farm products, logs, machinery and general merchandise. It likewise reports 631,681 short tons on the San Joaquin River for the year 1910; and 496,147 tons on the Sacramento River. The Hudson annually moves about 8,600,000 tons, chiefly of building materials, coal, wood, grain, lumber, ice, farm produce, manufactured products and general merchandise. The tonnage of the Delaware is in the nature of coastwise and foreign rather than river traffic, as it is the outlet for a large ocean port. In 1906, the U. S. Census Bureau reported an aggregate of 20,577,000 tons; and since then the traffic has fully recovered from the depression of 1907 and 1908. The net tonnage of all the vessels arriving at Philadelphia in 1911 was 7,459,691. The leading shipments are coal, sand, petroleum, stone, oysters and fish, fertilizers, chemicals and iron products; the leading receipts are sand,

coal, lumber, wood pulp, ties, mine props, oil, produce and fruit, chemicals, sugar, grain, and fertilizers.

The best known of all American streams, the Mississippi River, has but a light and declining tonnage. The largest item is the coal coming from the Ohio River; other articles carried include stone, gravel, sand, oil, provisions and groceries; grain and its products, cotton, cotton-seed oil and its products, iron and steel, lumber and live stock. The total shipments between St. Louis and Cairo in 1910 are stated at 289,759 tons; between Cairo and Memphis, 1,039,195; between Memphis and Vicksburg, 980,386; and between Vicksburg and New Orleans, 1,530,230, a total of 3,839,570 tons, as compared with 4,726,434 in 1909. The total, however, contains many duplications. It is reported that in 1906 the commerce of the entire Mississippi River system, including all tributaries, except the Ohio River system, did not exceed 4,304,278 tons, and that since then this traffic has, on the whole, slightly decreased.

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XXIII. ENGINEERING

CIVIL ENGINEERING

FRANK C. WIGHT

PROFESSIONAL NOTES

International Congresses.—In 1912 the United States was the host of two international congresses devoted to civil and hydraulic engineering, the International Congress of Navigation (see this title in Department XXII) held in Philadelphia, May 23-27, and the meeting of the International Association for Testing Materials (see *International Congress for Testing Materials infra*), held in New York, Sept. 2-7. At both congresses engineers from most of the civilized countries presented papers and were lavishly entertained by the American representatives. While the difficulties of international agreement on disputed topics were so great as to prevent any definite action as to specifications, methods, etc., the interchange of ideas and courtesies did much to justify the expenditures of time and money. In Washington, Sept. 23-28, the International Congress of Hygiene and Demography (see this title in Department XXX), while mainly of interest to physicians and vital statisticians, received considerable attention from sanitary engineers.

The Department of Agriculture.—The engineering profession was aroused during the past year by the action of the head officials of the U. S. Department of Agriculture in causing the dismissal and subsequent criminal indictment of Messrs. C. C. Elliott and A. B. Morehouse, chief and assistant chief, respectively, of the Bureau of Drainage Investigation, on the charge of false certification of account. A congressional investigation disclosed that the so-called crime

was, at worst, merely an accounting subterfuge common in governmental bookkeeping, and that the engineers in question were undoubtedly the victims of an official cabal. The Congressional Committee weakly condemned the Department, which thereupon moved that the indictments against the two men be quashed but did not restore them to their original positions. The affair did much to discourage engineers from entering governmental service.

Army Commissions for Civilian Engineers.—For the first time in its history the Corps of Engineers, U. S. Army, in 1912 commissioned a civilian engineer. Heretofore, the officers of that corps have been recruited from the honor graduates of West Point, but during the past year examinations were held for commissions, to which certain young and unmarried technical graduates were eligible. On account of some restrictions in the eligibility rules only four men presented themselves for examinations, and of the four but one was successful, but it is expected that future annual examinations will be more successful and that a new field of endeavor will thus be opened to the graduates of our civilian engineering schools.

BRIDGES AND BUILDINGS

Steel Bridges.—Steel bridge design has reached too fixed a standardization to show marked change in any one year. Its great field is in railway structures, where appearance is of secondary importance, and in all spans over 300 ft. The largest masonry span in existence is only 328 ft.

while steel has been utilized up to 1,800 ft. span. For the smaller spans and for municipal bridges concrete is fast becoming more popular.

Hell Gate Bridge.—The largest steel arch in the world is now under construction across the East River at New York City. This arch, 1,000 ft. in span, forms part of the Hell Gate Bridge which carries the line of the New York Connecting Ry. from the tracks which come up out of the Pennsylvania R. R. East River tunnels into Long Island City across the East River at Hell Gate into the Borough of the Bronx and thence north into Connecticut. Foundation work has been going on during 1912 and the contract for the steel has been let. For purposes of comparison the five largest steel arch bridges in existence are given below:

Name	Location	Span in Ft.
Hell Gate.....	New York City	1,000
Niagara (Upper Arch)...	Niagara Falls	840
Vlaur	France	721
Bonn	Germany	614
Roche-Bernard...	France	600

St. Louis Municipal Bridge.—During 1912 the Municipal Bridge at St. Louis was completed. This contains three plain trusses, each 668 ft. between end pins, the longest span plain truss yet attempted. The bridge was built by the city of St. Louis as a combined railway and highway structure. Owing to complications in determining its eastern approach it is not yet open for traffic.

Concrete Bridges.—Thousands of concrete and reinforced-concrete bridges were built during 1912, mainly for small arch and girder spans, but an interesting development has been the construction of a number of long viaducts as track crossings in cities, in which the old timber form of trestle bents with girder spans has been reproduced in reinforced-concrete. Such viaducts of extreme length have been built in Cincinnati, Kansas City, Fort Worth, and Seattle. The largest concrete bridge for railway purposes is now under construction for the Delaware, Lackawanna & Western R.R. in connection with its new Summit cut-off near Scranton, Pa. This viaduct, to

be built across Tunkhannock Creek Valley and named for that creek, will consist of ten 180-ft. and two 100-ft. five-centered concrete arches. It is 2,230 ft. long, 240 ft. above the ground at the depression of the valley and will contain approximately 164,000 cu. yd. of concrete and 1,140 tons of reinforcing steel. A somewhat smaller bridge on the same cut-off will comprise seven 150-ft. and two 50-ft. arches. This adoption of concrete for such large railway structures is a radical development.

A 420-ft. reinforced-concrete arch for the main span of the new Bloomfield Street Bridge, Pittsburgh, was proposed during the past year by the Public Works Department but was rejected in favor of a steel bridge by the City Council, with a saving of about \$275,000. This arch would have been 92 ft. longer than the present longest concrete arch but much smaller than the 703 ft. concrete arch designed to cross Spuyten Duyvil Creek and Valley in New York City. This latter was proposed some years ago but there seems to be no prospect of its being built.

Buildings.—The Woolworth Building in New York City (AMERICAN YEAR BOOK, 1911, p. 688), the highest building in the world, was completed in 1912. No structures approaching it in size were started during 1912 except the L. C. Smith Building in Seattle, a 42-story building, 461 ft. high, and the Union Central Life Insurance Building in Cincinnati, O., 32 stories and 509 ft. high.

Equitable Building.—The fire in the Equitable Building in New York City on Jan. 9, 1912, awakened the lay mind to the fact, well known to engineers, that the so-called fire-proof buildings of a quarter century ago are not proof against any conflagration which can get a good interior start. The building was one of a type common 25 years ago; with thick masonry walls, cast-iron columns, partly fireproofed beams and tile-arch floors. Its destruction was due to the immense amount of wood trim, the lack of fireproofing on the beams, and particularly to the shafts and wide-open spaces which allowed the flames full play. Incidentally, the ruins of the Equitable Building

were removed, starting in Aug., 1912, to be replaced, according to the present plan, by a 36-story building occupying the entire block bounded by Broadway, Cedar, Nassau and Pine Streets, which will be, when completed in 1914, the largest office building in the world.

RAILWAYS

Construction.—The building of new railway lines in the United States has about finished, in so far as the ratio of new to existing lines is concerned. During 1911 (the last official report) about 3,000 miles of new lines were built, a smaller mileage than in any year since 1897, and for the most part merely new track and cut-off work. In strictly new work in 1912 the Connellsville extension of the Western Maryland R. R. (*AMERICAN YEAR BOOK*, 1911, p. 688) and the Key West extension of the Florida East Coast Ry. were opened. Construction on the latter line was started in 1905 and in 1908 the extension was opened as far as Knight's Key. It leaves the mainland near Homestead, Fla., and passes over a chain of keys along the coast on fills and viaducts. Among the notable features are the Long Key viaduct, 2.7 miles of concrete arches, and the Knight's Key viaduct, 7.2 miles of steel girders on concrete piers. The prospect of the Panama Canal opening in 1915 has induced the Frisco Lines to lay out a new route, involving several old lines, connecting the gulf ports, New Orleans and Mobile, with Chicago. In Canada the great transcontinental system (*AMERICAN YEAR BOOK*, 1911, p. 688) is progressing rapidly and should be ready by 1914, as predicted. It is reported that the Canadian Pacific R. R. is to start double-tracking its line through the Rocky Mountains at a cost of about \$60,000,000. (See also IV, *Canada*.)

A commission was appointed in September by President Taft to examine into the transportation question in Alaska and to report upon the best solution of the railway problem there, particularly the "conclusions and recommendations with respect to the best and most available routes which will develop the country and

its resources for the use of the people of the United States."

Terminals.—There is considerable activity toward new union freight and passenger terminals in Chicago and Boston. In Chicago the interchange of freight from one road to another has to be made between 20 main line roads handling about 10,000 cars daily. At present each road has its own system independent of the others, with resulting complications. A commission was appointed in 1912 by the Mayor and it now has the design of one system under consideration. It is reported that a project has been approved involving the expenditure of about \$200,000,000, and centering around a new terminal to be built on a site bounded by Polk, 16th, Clark and State Streets. In Boston, Governor Foss, of Massachusetts, has recommended to the legislature the appointment of a public service commission as a preliminary to the construction of a \$100,000,000 terminal in the city, with a 4-track tunnel connecting the hitherto separated North and South stations. During the past year large terminals have been completed at Baltimore, Seattle, and Tacoma, and work started on new terminals at Kansas City, Mo., and Vancouver, B. C.

Accidents.—The most serious accidents of 1912 have been due to two causes; first, failure or incompleteness of the signal systems, and, second, track, particularly rail failures. The former is partly a result of old equipment and partly of human frailty; the latter seems to be caused by the rapid increase in weight of rolling stock. Studies for the betterment of steel rails are being vigorously pursued, but nothing definite was arrived at in 1912.

TUNNELS

Water Tunnels.—The New York City water supply tunnel under the Hudson was completed during 1912 and the pressure tunnels under the city progressed satisfactorily. Two Reclamation Service tunnels were completed; the Yuma siphon under the Colorado River, a 1,000-ft. bore 15 ft. in diameter, and the Strawberry tunnel in Utah, an irrigation line 19,200 ft. long.

City Tunnels.—In Montreal, a 3-mile railway tunnel under Mount Royal and leading to the new Canadian Northern Ry. terminal was started, and in New York City two new subway tunnels under the East River were laid out, though construction has not started. A subway tunnel under the Narrows, connecting Brooklyn with Staten Island, is also a part of future subway planning, but has not got beyond the project stage. In San Francisco two highway tunnels are projected, one, 6 miles in length, from Market and Valencia Streets to the southwestern section of the city, the other a three-quarter mile bore under Devadero St. In Pittsburgh, also, two highway tunnels have been projected; one, 5,500 ft. long, from First and East Carson Streets southwesterly, and the other 4,850 ft. from Carson Street near the Monongahela River to Woodville and Banks Avenue.

Railway Tunnels.—A few new railway tunnels have been completed during the past year mostly in additional track work. There seems to be little new in their design.

SUBWAYS

New York.—During the past year the long controversy over the design, construction and operation of the new subway lines was finally settled by an equitable assignment of the various lines between the two transit companies now operating in New York City, the Interborough Rapid Transit Co. and the Brooklyn Rapid Transit Co. As noted in another part of the *YEAR BOOK* (see XI, *Public Services*) each of the companies is to have lines invading what has hitherto been the other company's territory, the construction to be financed by both city and company and the operation to be conducted by the company on terms of fixed maximum profit. Provision is made for final ownership by the city. In all there are to be built 105.5 miles of road, or 309 miles of single track, about one-half of which, mainly in the outlying districts, is to be on elevated structure, at a total cost of close to \$300,000,000. Construction is now going on, though none of the lines or

branches is completed. Profiting by the experience of the present subways, many improvements in design and construction have been made. The principal of these are the wider use of reinforced concrete, provision for better ventilation, enlargement of station platforms, elimination of curves at stations so that side-door cars may be used and construction by the cut-and-cover method so that the streets are not torn up during the construction period.

Boston.—On March 23, 1912, the Cambridge subway section of the Boston subway was opened. This line extends from a terminal station under the Park Street station of the old subway to Harvard Square, Cambridge, in a double-track tunnel in Boston, over the Cambridge Bridge across the Charles River, through a 2-mile two-track tunnel in Cambridge. The total length of the new line is 3.2 miles, and brings Harvard Square within eight minutes of Boston Common. It is operated by a private company.

Chicago.—In Chicago the municipal Harbor and Subway Commission reported in September on a municipally-owned subway providing four main lines, viz., a North to South side connection, a West side trunk line, and Northwest and Southwest side arms. The cost of construction is estimated at \$96,000,000 and of equipment at \$35,000,000. No definite action has been taken on the proposal.

Pittsburgh.—In Pittsburgh a new ordinance was passed in the Spring of 1912 permitting the construction of a subway by private parties with certain provisions for future municipal operation, ownership or compensation. The project is, however, in a somewhat nebulous state.

The proposed subway in Toronto, Ont., noted in the 1911 *YEAR BOOK* (p. 690) has not progressed further during the past year, nor have the proposals for subways in Cleveland and St. Louis taken any definite form.

WATERWAYS

River and harbor work and the Panama Canal are reviewed in Department X.

New York State Barge Canal.—The canal was about 65 per cent. completed at the end of 1912, but is practically all under contract. In many places the new canal is being used as a part of the present smaller Erie Canal, but the slow progress on certain sections will prevent the passage of the 1,000-ton barges until full completion, probably in the season of 1916. The most serious break in the history of the New York canals occurred near Bushnell Basin on Sept. 3, when about 550 ft. of the concrete trough carrying the new canal across the 65-ft. embankment in the Irondequoit Creek Valley went out. This embankment was first placed in 1821, but was enlarged and strengthened for the latest canal section. The loss was about \$200,000, exclusive of the loss due to traffic stoppage and the cost of temporary repairs.

Welland Canal.—This new Canadian canal is to be built between Lake Erie and Lake Ontario to replace the present Welland Canal. It will have a depth of 30 ft. of water over the lock sills. The difference in elevation between the two lakes will be overcome by seven lift locks having dimensions of 800 ft. in length by 80 ft. in width, with a lift of 46½ ft. The total length of the canal will be about 25 miles and the location in general follows the line of the present canal from Port Colborne, on Lake Erie, to Thorold, about 17 miles. The line runs then to McCalla's Grove, on Lake Ontario, a point about three miles east of the entrance to the present Welland Canal at Port Dalhousie. The locks on the new canal will all be located in this northern stretch of eight miles. The completion of this canal will enable the largest size lake steamers to pass from Lake Erie to Lake Ontario with very little detention as regards time, on account of the small number of locks. The present Welland Canal accommodates vessels of only about 2,000 tons capacity and passage through it is very slow on account of the large number of locks.

Floods.—During March and April, 1912, the lower Mississippi, that is, the portion of the river between Cairo and the Gulf, was subjected to a flood which exceeded all former records as

to stages reached and volume of water passed. The flood was the result of a series of unusual storms passing across the lower Missouri and Mississippi watersheds and practically the whole of the Ohio watersheds, and so timed as to bring a simultaneous discharge of high waters from the various tributaries into the main river. The flood pressure proved too great for the levees in many places and a number of breaks allowed the flooding of neighboring lands to the extent of many thousands of square miles. The loss of life and property was very heavy and for months state and federal funds were necessary to relieve the suffering of the inhabitants of the flooded districts.

The exceptionally high rainfall of the spring and summer of 1912 resulted in many other floods throughout the country, the principal of which were those in Pittsburgh (March), Wisconsin (July) and Denver, Colo. (July).

DAMS AND LEVEES

Masonry Dams.—Two very large masonry dams have been started during the past year, the Arrowrock Dam for the U. S. Reclamation Service, and the Kensico Dam for the New York Board of Water Supply. The Arrowrock Dam, located on the Boise River near Boise, Idaho, impounds the waters of that river across a narrow, high cañon common to the irrigation dams of the West. It is to be 351 ft. high, and 1,060 ft. long on its crest, which is curved upstream for greater stability to the usual gravity section. It is to be built of rubble concrete, that is, concrete in which are imbedded large stones, and will contain about 520,000 cu. yd. of masonry. The Kensico Dam, located near White Plains, N. Y., will form the main distributing reservoir for the 500,000,000 gal. per day water supply now under construction for the city of New York. It is to be 300 ft. high, 28 ft. wide at the top and 228 ft. wide at the bottom, which is some 130 ft. below the present ground surface. It is a straight dam, in gravity section, and will contain about 1,000,000 cu. yd. of rubble concrete. (Compare these two dams

with the high dams noted in table in the *AMERICAN YEAR BOOK*, 1910, p. 685.)

Keokuk Dam.—The large concrete dam across the Mississippi river at Keokuk, Iowa (*AMERICAN YEAR BOOK*, 1911, p. 692), is progressing rapidly and should be put into service in the summer of 1913.

Small Dam Failures.—The consistently high rainfall of 1912 resulted primarily in a number of floods throughout the country, but secondarily was the cause of a great number of small dam failures. It has been the habit in many parts of the country where small water powers are available to impound the water behind low dams, in the construction of which only the natural talent of the local carpenter or mason is exercised. The result is a number of very weak and unscientific structures whose failure is only a matter of high water. In one county in New York, there were five failures of such dams in six weeks of the Spring of 1912, with damage aggregating some hundreds of thousands of dollars to downstream property. As a matter of protection to their citizens a few states have adopted some form of supervision of such structures. The state control of dams is still only in an experimental stage, but the obvious necessity of protecting life and property against the ignorance, false economy or obstinacy of dam owners is gaining many adherents to the proposition.

Ohio River Dam No. 26.—On Aug. 8, 1912, one day after the water was let in behind it, the U. S. Government Dam No. 26 across the Ohio River, below Gallipolis, O., partially went out and caused a loss estimated at \$60,000. This is one of the dams designed to improve navigation on the Ohio, and consisted of a lock, two bear-trap dams, and a 600 ft. section of movable Chanoine wickets founded on a concrete base resting on the shale bottom. The failure occurred in the shale foundation which was sheared off below the concrete bases, allowing the Chanoine wickets to slide downstream.

Levees.—The extensive damage to the Mississippi River levees in the flood of 1912 has led to many suggestions for new forms of design, among

which have been concrete walls and concrete or steel pile cores in earth walls. The best engineering opinion seems to be, however, that no improvement over the present earth dikes is possible within reasonable cost.

DRY DOCKS

Brooklyn Dry Dock.—Dry Dock No. 4 at the Brooklyn Navy Yard was completed during the past year, after seven years' labor, during which three different contractors have successively taken the contract. The dock is of concrete construction, 723 ft. long and 139 ft. 6 in. wide over all, and 36 ft. deep over the entrance sills, providing dockage for the largest naval vessels now contemplated. The contract was first let in 1905 for a much smaller dock, to be founded, with an inverted-arch bottom, on timber piles, but the immense difficulty in retaining the soft earth sides of the open cut attempted by the contractor caused him to abandon the contract in April, 1908. It was soon relet for a larger dock, with the same type of footing, to another contracting company, but it, too, failed to provide for the soft earth conditions, though it did attempt to construct the side walls in a trench instead of in open cut for the entire dock. This contract was forfeited, for lack of proper progress, in Oct., 1909, and it was thought that the government would be forced to continue the work by day labor. This was decided against and bids were asked of five selected companies for the completion of the work, plans for its prosecution to be submitted with the bid. Under this arrangement the contract was awarded to Holbrook, Cabot & Rollins, of Boston, for the construction of the dock with a reinforced-concrete floor supported on concrete piers sunk as compressed-air caissons, an entirely new type of foundation for dry docks. This company successfully carried the contract to completion and on May 10, 1912, it was emptied for the initial docking of a U. S. battleship. The cost of the dock was about \$2,750,000. It was completed under the direction of the Corps of Civil Engineers, U. S. N.

Dry Dock No. 4 is one of the largest dry docks in the world, though smaller than the 1,020 ft. Liverpool dock, several other English docks, and the U. S. Navy dock at Seattle, completed during 1912. This latter is 863 ft. long, 143 ft. wide and 47 ft. deep.

WATER SUPPLY

New Projects.—Reports on large additional water supplies were made in 1912 for Toronto, Ont., and Yonkers, N. Y., and some progress was made in Charleston, S. C., and Omaha, Neb., toward the conversion of privately owned systems to municipal ownerships. Dallas, Tex., completed a large additional system, and the new systems in Los Angeles and New York progressed favorably. In the latter a connection was made between the upper portions of the new and old systems so that in event of a water shortage before the completion of the new system water can be pumped from the new Catskill drainage area into the present Croton reservoir. This removes the necessity for the projected emergency plant described in the *YEAR BOOK* for 1911 (p. 693). The cities of Minneapolis, Minn., and Erie, Pa., have large mechanical filtration plants under construction. (See also XI, *Public Services*.)

Purification.—Hypochlorite of lime as a water disinfectant or sterilizing agent was used extensively by various municipalities during 1912, mostly as an emergency safeguard against sudden and unexpected pollution, but ozone sterilization or the use of the ultra-violet ray (*AMERICAN YEAR BOOK*, 1911, pp. 621-2, 693-4) did not progress in practice or theory. Electrolytic purification received some publicity on account of a plant installed in 1911 in Oklahoma City. Contrary to some lay views, this type of plant is not effective because of the miraculous bactericidal properties of the electric current, but on account of the chemicals generated by the current, and these chemicals can generally be generated more economically away from the plant where they are applied. (See *Engineering News*, March 21, 1912; see also XXVI, *Sanitary Chemistry*.)

SEWAGE DISPOSAL

Stream Pollution.—The requirements of sewage purification are the subject of some controversy at present. Extremists in sanitation, for the most part health officers and physicians, are urging that every community should be compelled to purify completely (i. e., sterilize, as well as clarify) all sewage which is emptied into a water course, the pollution of which might create a nuisance to another community. The more moderate view held by the sanitary engineer is that the purity of such water courses should be preserved to the extent of clarifying all sewage emptying into them, but that only in extreme cases is it necessary to resort to anything further than such clarification plus the purification afforded by dilution in water.

In the few cases where the stream is very small or a downstream community quite near, sterilization of the sewage is obligatory, but the consensus of engineering opinion is that the place to purify a water supply is at its intake and the natural purifying properties of running water should be allowed to act on sewage from which the offensive matter has been removed by the usual methods of screening, sedimentation or putrefying tanks.

This view was brought to public notice in 1912 by an order of the Pennsylvania State Board of Health requiring the city of Pittsburgh to purify its sewage to a drinking-water standard for the assumed protection of a few thousand persons living on the Ohio River below Pittsburgh. The city maintained that such purification would entail a first cost of \$37,000,000 and was unnecessary, for the reasons given above and also because the downstream communities could be provided with other water supplies at less cost. The controversy is still in abeyance. A similar condition exists in New York harbor where the state of New York is endeavoring to prevent some New Jersey towns from emptying unpurified sewage in the lower harbor. During 1912 it was decided that the Bronx Valley sewer which empties into the rivers surrounding New York City should

be provided with a purification plant so that the harbor might not be further polluted by this large effluent. (See also XI, *Public Services*.)

New Projects.—Two units of the Imhoff tank installation in Atlanta, Ga., were completed in 1912, and new plants of this type recommended for Albany, N. Y., and for Montclair, East Orange, and Orange, N. J. Investigation for extensive new sewer work was started in Cincinnati, Los Angeles, Chicago, and Cleveland.

STREET REGRADES

Following the lead of Seattle (*AMERICAN YEAR BOOK*, 1910, p. 680) the cities of Pittsburgh and Portland, Ore., are each now engaged in extensive regrade work, in which obstructive hills on city streets are being reduced to more easily traveled grades. In Pittsburgh the so-called "Hump Cut" involves the reduction of about 12,000 lineal ft. of street a maximum depth of 16.3 ft., widening three streets for a total length of over 2,000 ft. and opening a short connecting street. The work is all being done in the lower peninsula of the city where the property is expensive and the traffic great. Excavation is being made mostly by steam shovels. In Portland a large hill is being reduced by hydraulic giants and the spoil used to reclaim a number of acres from an adjacent lake. The area is not now thickly populated, but is expected to be used for future residence purposes.

CEMENT AND CONCRETE

Production.—The production of Portland cement in the United States during 1911 amounted to 78,527,637 bbl., only a slight increase over that of 1910 and not equal to the regular rate of increase during the past few years. The figures for 1912 are not yet available, though the customary increase is expected. Prices have been very low, owing to overproduction and a surplus of mills.

Autoclave Test.—Portland-cement concrete is second only to steel as a structural material and its use is growing rapidly. That its properties are not yet thoroughly understood, however, is shown by the condition of

some concrete structures built within the last decade which are now beginning to show signs of deterioration. Such instances are only occasional, for most concrete is admirably suited to its purposes, which leads to the easy generalization that all poor concrete has been made poorly or of poor materials. The very fact that poor methods and materials surely lead to a poor structure has not deterred certain investigators from attempting some other explanation of deteriorated concrete. The most notable of these during the past year has been the Lackawanna R. R., which, in investigating some decomposed concrete work on its lines, decided that the fault lay in the cement. The company therefore incorporated in its specifications a requirement that all Portland cement should remain sound (i. e., should not crack, craze or change in volume) under a steam pressure test of 285 lb. per sq. in. This is substituted for the current American soundness requirement of no change under boiling or steam in open air and the German test of soundness after immersion in cold water. This requirement, known as the "autoclave" test, is now being investigated by the manufacturers and by the Government.

Shipping Cement in Bulk.—An important experiment has been tried by one cement company in shipping cement in bulk, as wheat and other grains are now shipped. As the companies now give an allowance of 40 cents for all returned bags on approximately every \$1.40 worth of cement, the economic value of this step will be appreciated. For large works where large quantities are required it would seem to be an admirable method.

Specifications.—The United States in 1912 issued a standard specification for all cement purchased by the Government. This is similar in intent, though slightly different in wording, to the generally accepted American standard issued by the American Society for Testing Materials.

Electrolysis.—Nothing new in the electrolysis of concrete developed during 1912. It seems certain that where direct electrical contact with concrete

reinforcement exists there is danger of the electrolysis of the steel and the consequent decomposition of the concrete, but no proof has been brought forward to show that plain concrete can be so affected.

ELECTRICAL ENGINEERING

T. COMMERFORD MARTIN

CENTRAL STATION STATISTICS

The electric light and power industry underwent rapid development during 1911-12. The latest statistics available as to central stations are of April, 1912, and show in existence in the United States, 5,769 companies and 1,372 municipal plants; while Mexico had 67 companies, the West Indies seven and the Republic of Panama two. Of these systems no fewer than 3,738 dealt also in electrical supplies; 267 supplied steam for heating, and 231 made ice. The investment in the industry in the United States reached a total of \$2,500,000,000, with annual gross earnings around \$400,000,000, based on a production of electrical energy estimated at not less than 12,000,000 kw-hr. As a comparison it is interesting to note that in Great Britain 493 such undertakings were in operation at the same time; inclusive of power-transmission enterprises the number did not exceed 600. The figures for Germany in 1911 were 2,526 stations; for Austria, 740. It is interesting, as indicative of electrical advance in the Far East, that Japan reported 367 electrical companies, with a capitalization of \$225,423,000. The magnitude of the requirements for current in American cities may be judged from the fact that the Commonwealth Edison Co. of Chicago ordered from England a steam turbo-generator of 40,000 h.p., the largest electrical generator in the world. Four of these are to go in one new station. At Detroit huge boilers have been installed, any one of which is capable of supplying turbo-generator loads up to 11,000 kw. (See *AMERICAN YEAR BOOK*, 1911, p. 706.)

TRANSMISSION

New Projects.—A large section of the central-station industry is that

devoted to electrical power generation and transmission in the wholesale form, as at Niagara Falls, leaving it to local companies to distribute to the individual consumer. The greatest new plant of that character is rapidly approaching completion at Keokuk, Ia., where the power station of the Mississippi River Co. will have an initial rating of 150,000 h.p. and an ultimate rating of 240,000 h.p., and will require a total investment of \$25,000,000. St. Louis, Mo., 140 miles away, has just made a contract for not less than 60,000 h.p. on a base rate of \$18 a h.p. year at 60 per cent. load factor, revisable every 10 years; and this contract alone provides adequately for the commercial success of the plant. Meantime many great systems have been undertaken in Canada, and one of 1,000,000 h.p. requiring \$100,000,000 capital has been planned by capitalists looking to Montreal as a market.

Voltages.—These systems now depend frequently on very high voltage for the economical delivery of their energy to distant points. There are now at least half a dozen lines operating successfully at about 100,000 volts, and the Commonwealth Power Co. in Michigan carried its voltage in 1912 over 125 miles of line up to 140,000 volts. A plant is now being built in California 275 miles from Los Angeles which will deliver its energy to that city at 175,000 volts, and a pressure of 250,000 volts is confidently predicted. The network of the Ontario (Can.) Hydro-Electric Commission has reached completion and is now delivering current to 29 municipalities over 181 miles of 110,000-volt lines and 180 miles of 13,000-volt lines. The Commission purchases energy at Niagara Falls from the Ontario Power Co. at \$9.40 per h.p.-year. One of the novel schemes of the year is the organization of a company to utilize the water powers of Iceland, aggregating 250,000 h.p.

LIGHTING

Lamps.—The year witnessed a marked extension of the use of metallic-filament incandescent lamps, both tungsten and tantalum, in place of the carbon filament, the change being favored by the growing life and lessening cost of the new forms, as well as by the admitted economy in consumption of current. It was stated at a convention of central-station managers in Chicago that the exclusive use of tungsten lamps of 1.25-watt consumption per candle would result in a total saving of \$240,000,000 a year, as against carbon-filament lamps of 3.1 watts per candle. The tantalum lamp found much favor in interior work while the tungsten was increasingly employed for exterior illumination also.

Street Lighting.—Although the plain arc lamp remained in use as the chief source of street lighting, and while the tungsten seemed its chief rival, other new forms found favor. In September the Board of Trustees of the Sanitary District of Chicago gave a contract for 4,000 flaming-arc lamps to be used in lighting the streets, duplicating a similar order given in February, so that the new street lighting of Chicago includes 8,000 of these powerful, brilliant lamps, making it probably the most intensely illuminated city in the world, so far as the main thoroughfares are concerned. These lamps burn for 100 hours with one set of electrodes and are 550 watt, 10 amp., series, alternating. Ogden, Utah, also installed during the year a complete street-lighting system of 250 luminous arc lamps of 4 amp. The general success of flaming arcs thus indicated has led to the introduction of a three-phase alternating-current lamp with three converging electrodes, giving a current consumption with a clear glass globe as low as 0.2 watt per candle. Such units, however, are too large for street lighting and are best adapted for large spaces.

The quartz mercury-arc lamp has meantime been making a place of its own. In Chicago, to show how poorly the city lighted its streets under the old conditions, a body of business men installed a group of six quartz-tube

mercury-vapor lamps in a block of Randolph Street, each of 5,000 candle power; they burned for a period of seven hours per night at a cost of 69 cents per curb foot per annum. Most of the quartz-tube lamps are still made in France and Germany, and their use in both countries is greater than here, chiefly for outdoor purposes because of the greenish color of the light. Typical lamps made in this country during the year have an arc tube five inches long with an arc of 4 in., and a specific consumption in the 110-volt circuit of 0.4 watt per spherical candle power.

Diffusing Bulbs for Tungsten Lamps.—Among the attempts to improve electric lighting may be noted the diffusing bulb for tungsten lamps invented by Peter Cooper Hewitt, who introduced the mercury-vapor lamp. On account of the intense brilliancy of the tungsten incandescent lamp it is often shaded or used with a frosted bulb, which involves loss of efficiency because of the absorption of a large portion of the light. Dr. Hewitt has provided a bulb with parallel longitudinal grooves in the outer surface. The lamp thus becomes a myriad of long, narrow prisms so diffusing the light that the whole bulb appears to be aglow, and the light being thus distributed over a large surface does not hurt the eye, while practically none of it is lost. The grooves are made by etching the glass with hydrofluoric acid.

Light Quality.—The question of eye fatigue from vapor lamps has been active for some time, and it was reported from Paris in March that a member of the committee appointed by the Minister of the Interior on the subject had declared that the committee would condemn several forms of popular lighting, suggesting means by which "daylight" values could be given such illuminants as were worth retention. Discussing during the year before the Franklin Institute, Philadelphia, the approximation of artificial illuminants to sunlight, Dr. E. F. Nichols pointed out also that while one cannot increase the degree of incandescence of any usable sources of low temperature so as to make them approach nearer to sunlight, it is possible to change the quality of

their light by the use of proper screens.

ELECTRICITY AND AGRICULTURE

One of the great developments of electricity in 1912 has been in its application to agriculture. The big electrical engineering bodies have taken up the subject very seriously, in papers and committee reports, and the matter was brought to the attention of the Department of Agriculture, while a bill was introduced in Congress for the creation of a Bureau of Farm Power, with the object of stimulating the use of mechanical power in place of manual and animal. Manual farm labor costs 11 cents per hour and animal 8 cents, while electrical energy, especially from water powers, is obtainable at much lower prices, averaging under 5 cents. There are 30,000,000 horses and mules in the country, 90 per cent. of which are engaged in agriculture.

In such states as Illinois, Ohio, Colorado, California, large numbers of farmers are now being supplied from power circuits, the service being peculiarly valuable and economical when applied to fruit and poultry farms and areas of intense cultivation. A vast amount of irrigation and pumping is also being done in the same manner throughout the west and the Pacific Coast. The Northern Colorado Power Co. has developed a new idea in pumping to the surface, over a large arid belt, the huge body of under-flow water. With transmission circuits of 44,000 volts and branches at 6,600 and 2,300 volts, lines have been established all over a territory in northern Colorado embracing 32 towns. A test made on 57 pumping plants shows that with a water lift of 25 ft. and an average investment of \$7.45 per acre, a foot of such "artificial rainfall" could be secured at from \$1.75 to \$2.25 per acre-ft. Even \$2.75 would be much below the ordinary cost of water rights and their maintenance.

HEATING AND COOKING

An Electric Bakery.—Great advances have been made during the

year in the perfection and introduction of apparatus for electric heating and cooking, both for manufacturing and for domestic purposes. In the former class may be mentioned a bakery at Milwaukee which has installed a 300-loaf electric oven, producing 14,400 loaves of wheat bread per day. The electric oven occupies one-fifth the space of the old coal fire ones. The energy used costs $\frac{1}{8}$ cent per loaf, and the demand for bread cooked under these conditions has been so great that the plant is being doubled. Electricity is also used to operate the dough mixers and cake mixers, and inclosed chafing dish units are employed for the lard and cottonseed oil boilers for doughnuts. The insurance rates discriminate in favor of these applications.

Miscellaneous Heating Applications.

—Among miscellaneous heating applications is the use of electrically warmed jackets for observers in astronomical observatories, where work must be done at the temperature of the outside air. In freezing weather the men who wired the towers of St. Patrick's Cathedral, New York, for the illumination in honor of Cardinal Farley were kept warm by electric jackets in circuit with the lamps. When the great Equitable Building in New York City burned down, thousands of security certificates, bonds, etc., were saturated with water. These were dried out with electric irons and then hung on clothes lines to dry, in front of fan motors blowing warm air. Electric drying cabinets have been introduced in printing offices to hasten the drying of the printed sheets. The advance in electrically heated incubators is really startling. One put into service at New Orleans has a capacity of 6,000 eggs. It is 40 ft. long and 5 ft. wide, and contains 40 compartments, each with a capacity of 150 eggs. The cost of operation is 50 cents per compartment per hatch. Electric toasters have been successfully applied by millinery firms to the curling of feathers. One of the newest applications is that made on the Pacific Coast in ripening walnuts. Seven to ten days are required in the open air and sunshine. With electric heat the term has been reduced to 24 hours. The walnuts six

deep are piled in cabinets over electric grids. Air is then blown in slowly and warmed up to 140 deg. before passing over the walnuts. The most extraordinary new use of electric heat is in crematories started this year at Oakland and Pasadena, Cal. The body in the casket is placed in the individual retort. The temperature rises inside of an hour to 2,000 deg., the organic products undergoing distillation. In another hour nothing remains but the mineral matter and ash, on a clean tray. There is an entire absence of noise, flame and dirt. The charge is \$50 per cremation, which leaves a substantial profit.

Domestic Applications.—As to domestic applications, these multiply daily and are doing much to offset the high cost of living, especially in diminishing the number of servants required. Note is made of a 20-room house at Colonia, N. J., occupied by a woman with two children, who keeps no servants, as electricity has rendered them unnecessary. The manual labor is all done by motor-driven appliances. The electric flat-iron, fireless cooker, coffee percolator, water heater, egg beater, etc., do the rest. In the cooking of joints, it has been shown that with electricity there is less shrinkage of the meat, so that the gain in this direction far offsets any increased expense that might come from high charges for electric current.

The electric fireless cooker is one of the innovations of the year. It consists of two heating chambers built as a unit upon the heat insulation principle. In the door of each chamber is a thermometer controlling an adjustable switch set to open the circuit at any desired temperature. In series with the chamber-controlling switches is a master switch under control of an alarm clock, which may be set to close the switches at any desired time. With this stove the preparation of a full dinner becomes a simple matter. The prepared vegetables are placed in one compartment, the thermometer being set to boiling temperature; the meat is placed in the other compartment, that being set to roasting temperature. The clock to turn on the cur-

rent at the proper time is then set and the cooker needs no more attention. At the proper time the clock switches on the current and the respective thermometers regulate the current, so as to supply just the proper amount of heat to each compartment. Ten minutes before dinner time the compartments are opened and the food, which contains all the natural juices unaltered by gas or products of combustion, is ready. It is said that the compartments in a stove of this type are so well insulated that no more heat is radiated from them than from a 16 candle-power lamp; and that with gas at a dollar per 1,000 cu. ft. and electricity at 10 cents per kw.hr., the electric stove costs far less to run than the gas stove. There are sockets on the top of the stove to which electric broilers and coffee percolators may be attached. This, however, is not the latest step, as stoves have been patented during the year to absorb electrical energy at a constant low rate throughout the day and give it off quickly, as needed, for cooking purposes. This brings further economies within range.

The Engineers' Club of St. Louis, the jail at White Plains, N. Y., and other institutions are installing equipment to do all their cooking by electricity.

Heating of Buildings.—The electric heating of rooms and buildings is coming into vogue in this country, but even more progress is being made abroad. The St. Sebaldus Church, Nuremberg, has been warmed by placing an electric heater in each pew, just as is done in the staterooms of modern steamships. The plant at Gothenburg, Sweden, as the result of tests on 22 office buildings and residences ended April 1, is going in extensively for such work, with the employment of heat accumulators taking surplus energy at night.

An example of another class of heating is offered by the preparations of the National Cash Register Co. at Dayton, O., to melt all its brass, of which it uses vast quantities, in electric furnaces requiring 2,000 kw. Electric wax melters have been installed by a number of the large banks in New York City.

MOTOR APPLICATIONS

Lumbering.—The year has been distinguished by the increasing variety given to the application of the electric motor. A few instances may be cited. One is to be credited to the great lumber country in the states of Washington and Oregon, where motor-driven winding engines have been put in use for "snaking" the big logs from the forests where they are cut, down to the water's edge for floating to the mills. The installation in the Coos Bay country has been quite successful. Experiments have also been made during the year in the lumber regions with motor-driven tree-felling machines, which move rapidly wires whose friction burns kerfs through the tree trunks. Such plants derive current from water powers, but the saw-mill refuse, now disposed of by burning as waste, is being utilized in generating stations for the lumber camps employing these methods.

Pumping.—In like manner Niagara River has been made to pump itself for the water supply of the city of Niagara Falls, N. Y. Current is obtained from hydro-electric plants driven by the energy of the falls, and the water from the river is passed through the settling basins and delivered to the street mains by motor-driven centrifugal pumps. The plant is capable of delivering 13,000,000 gal. per day. Pumping is, in fact, a favorite occupation of the modern electric motor. An unusual example was afforded in July when Denver was flooded by four cloudbursts inside of 30 minutes. The Denver Gas & Electric Light Co., with a portable motor pumping outfit, not only dried up a great many cellars, but freed large low-lying areas from surplus water at the rate of 36,000 gal. per hour, at a cost of \$2 per hour. In West Virginia and California, the motor was applied to pumping oil; and in the Kern River and Los Angeles fields over 300 motors are now in use at a cost only one-half that of steam drive. The wells average 850 ft. in depth, and the saving for 233 wells is put at \$120,000 per year.

Dredging.—In the Susquehanna River, Pa., are large deposits of anthracite coal, pea and buckwheat.

washed down by every spring freshet. The greatest accumulations are found at Plymouth and Northumberland. These are being reclaimed for use in local central stations. At Harrisburg, sand pumps driven by motor are used to load small flat scows. At Plymouth a float equipped with motors totaling 190 h. p. has a centrifugal pump which sucks the coal from the bed of the river and forces it with the water through a long pipe line to the shore, where the coal is deposited. The pump can suck up 50 tons an hour.

In April work began on a great dike 40 ft. high and 3 miles long, to protect the lower sections of East St. Louis, Ill., against the depredations of the Mississippi River. Taking current from a local generating plant, through a submarine cable, a dredge with an 800-hp. electric motor handles 15,000 cu. yd. of material per day, sucking from a maximum depth of 35 ft. and lifting to the extreme height of the 50-ft. wall. The dredge is equipped with other motor-driven apparatus, including a 250-hp. rock-cutting machine.

Milling.—In 1879, the famous Queen Bee flour mill was built at Sioux Falls, S. D., at a cost of \$500,000. It was shut down a year later on account of transportation troubles and stood idle until 1912, when it was found that electric-motor drive with central-station energy had rendered its operation profitable. When first driven by ordinary 800-h.p. water-wheel drive, its capacity was 800 barrels of flour per day. With only 485 h.p. of electric motors its capacity is 1,200 barrels.

Ship Propulsion.—The first instance of electric ship propulsion is exemplified in the equipment of the new Government collier *Jupiter*. This is one of the most radical departures in marine engineering in many years. The collier has a steam turbo-generator plant which delivers its energy directly to two motors, one mounted on each propeller shaft. These are induction motors, and the propellers are designed to operate at 110 r.p.m. at a speed of 14 knots. The turbine is equipped with a governor so arranged that it is capable of holding the speed automatically at any point

from about 5 knots up to the maximum. The first commercial boat of such a type is being built in Canada for the Great Lakes traffic. She has a dead-weight capacity of 2,400 tons gross on 14-ft. draft. She has two 300 h. p. high-speed oil engines driving generators, whose current is delivered to a motor directly on the propeller shaft. Another marine application is in the replacing of steam steering gear by electric motor-driven gear.

TRACTION

Storage Battery Cars.—The street railway industry has not signalized any radical improvements during the year. It was a period of normal growth diversified by the trial of various new cars, some of the double-deck type and others aiming to avoid the high step that has proven so objectionable. Storage-battery cars have enjoyed a new vogue, and their use has been extended to main railroad lines. In September the first railroad train operated by storage batteries and the multiple-unit control now universal on subway and elevated roads, was run over the tracks of the Long Island Railroad from the Pennsylvania Station in New York City to Long Beach, covering the 25 miles outward in 57 minutes and returning in 53 minutes. The equipment has gone to a branch of the Cuban railway system running 100 miles out of Havana, over which a steam locomotive hauling one car has been operated. The train consisted of three cars, each equipped with four 200-volt motors and 216-cell Edison storage batteries. The cars are built with vestibules and are 35 ft. 5 in. long, accommodating 42 passengers.

Diesel Engine Cars.—Another new type of car is that placed in commission on the Enköping-Höby line of the Swedish State Railroads. It has a Diesel oil engine driving a dynamo which feeds current to the car motors. The railroad is a short section of 25 miles, and a speed of 45 miles an hour is attained. The fuel consumption over this distance is 22 lb. of oil, as compared with 0.5 to 1 ton of coal in a steam locomotive for equivalent runs.

Trunk Lines.—The equipment of main lines of steam railroad for electric traction is proceeding, though not rapidly. There are now seven leading American railways with electric equipment: Baltimore & Ohio, New York Central, New York, New Haven & Hartford, Pennsylvania, Great Northern, Grand Trunk, and Michigan Central. A good deal of new work is planned. The announcement was made in July that the New Haven had decided to electrify its main line between Boston and Providence with the single-phase system it already employs. The line will be four-track and a large power plant is to be built at Readville, Mass. The cost of the work, now beginning, is \$7,000,000.

In Europe activity is being shown in this work, the great density of population being an added argument. From Sweden is reported the double-track electrification of the main line from Gothenburg to Alingsås, to be ready in 1914. In Switzerland a favorable report has been made on electrifying the line across the Alps through the St. Gothard tunnel. The Prussian Ministry of Railroads has prepared a plan for the substitution of electricity for steam on all the city and suburban railways of Berlin. The work is to begin at once and to be finished by 1916. The cost is \$31,000,000. The trains are to be hauled by locomotives instead of being propelled by distributed motors under each car. The service is increased by the change from 24 trains per hour, carrying 12,000 passengers each way, to 40 trains, carrying 25,000. For a road in Switzerland are being built ten of the most powerful single-unit electric locomotives in existence. Each weighs 108 tons and is capable of developing 2,500 h. p. at a speed of 50 miles an hour, and of increasing to 75 miles an hour for an uninterrupted run of 1½ hours.

AUTOMOBILES

Commercial electric vehicles increased enormously in number during the year, and are growing in favor for city work. The Massachusetts Institute of Technology made a test on

all classes of delivery wagons and trucks and reported that the cost per delivery with the gasoline wagons tested was 6.5 cents, with horses 5.9 and the electric vehicles 5.4. In the case of five-ton trucks, the cost per mile averaged 58 cents with gasoline, 55 cents with horses, and 47 cents with the electrics. The gain in the use of electrics is indicated by the fact that whereas two years ago in Detroit there were only five electric trucks, last April there were 125, ranging from 750-pound delivery wagons to five-ton drays.

Fire Apparatus.—The Springfield, Mass., fire department has installed electric vehicles, including a ladder truck, combination wagon and three hose wagons. The truck carries a total length of 325 ft. in ladders, and a crew of seven men. It is driven by 80 cells of 17-plate storage battery and four three-h.p. motors. It weighs 10 tons and makes 20 miles per hour on the level. The combination wagon carries a 40-gal. chemical tank, and 1,200 ft. of hose. It weighs 7 tons, and is driven by four three-h.p. motors at 30 miles an hour. The saving as compared with horses cuts in two the cost of operation. Germany has also adopted electric fire-engine apparatus.

According to President Blood of the Electric Vehicle Association, there was at the beginning of the year, in the United States, \$10,000,000 invested in electric trucks and \$30,000,000 in electric pleasure vehicles; and the industry was growing at a rate that would double these figures long before 1915.

TELEGRAPHY

Wire telegraphy is an art that does not give many signs of technical or financial growth, owing to the check administered by the wireless and the telephone. But that it has unsuspected powers of expansion is shown by the fact that during the fiscal year ending June 30, the Western Union Telegraph Co. increased its gross revenues from \$35,478,793 to \$41,661,439. Part of this increase was due to the newer facilities and lower charges for sending land and subma-

rine cable messages at times when the lines are not loaded with business. (See also XXII, *Telegraph and Telephone Companies.*)

Wireless telegraphy has dominated the situation all the year, and many notable advances have been made; while the saving of hundreds of lives, due to wireless signals, when the colossal *Titanic* was sunk off the Newfoundland Banks by an iceberg, will never be forgotten in the annals of sea disasters. That frightful catastrophe and the legislation affecting marine wireless telegraphy to which it gave rise are reviewed on another page of the YEAR BOOK (see I, *The Titanic Disaster*). The British Government has made a contract for a series of Marconi stations that will virtually encircle the world along the lines of British territory (see IV, *The British Empire*). At Sayville, N. Y., a powerful Telefunken station has been built to establish direct communication with Berlin, 3,500 miles distant, besides talking with steamers four or five days away. The U. S. Signal Corps has developed for its portable wireless sets a small generator which can be operated manually. It gives 200 watts, has a radius of 15 miles, and can be packed on a mule.

The Belgian government has adopted wireless telegraphy as a means of mapping its colonial possessions, especially the Kongo, so that a map that would ordinarily take ten years to prepare will be ready in two. In like manner the Russians are proposing the installation of radio-telegraphic stations within the zone of the Arctic Sea. Indeed, no Arctic expedition needs now to be out of touch with its base for a second. The increasing range of land wireless is shown by communication between Para, Brazil, and Lima, Peru, 2,100 miles, with mountains 20,000 ft. high between the stations. The Italian naval and military authorities report wireless telephone transmission as successful over a distance of 160 miles. A young Italian, F. de Bernocchi, was reported in October as successful in using the Marconi system to transmit pictures, drawings and autographs. During the year the use of the wireless in aeroplanes was

fully demonstrated. The Prussian Department of Public Works has developed a wireless system whereby ships, dirigible balloons, aeroplanes, etc., in fog or darkness can pick up data determining their location, the antennae giving out signals corresponding to a given position in space, which an operator with a proper stop watch can decipher by their relative intensity.

TELEPHONY

Statistics.—The statistics of the Bell telephone system given on another page of the YEAR BOOK (XXII, *Telegraph and Telephone Companies*), indicate the extraordinary advance of the art and industry year by year. The extent of the use of the telephone in the United States is evidenced by the fact that London with a population more than three times as great as Chicago, has fewer telephones; Paris is twice the size of Boston, but possesses little more than half as many telephones; Liverpool, three times as great as Los Angeles, has only a little over a third its number of telephones; and Birmingham, with a population of over half a million, has 4,000 fewer telephones than Grand Rapids, with a population of some 140,000. In the whole of the United Kingdom there are only about as many telephones as in New York and Chicago; in all France there are fewer than in Chicago alone; in all Russia there are fewer than in Philadelphia; in Austria fewer than in Boston; in Italy fewer than in Los Angeles; in Spain fewer than in Toledo, Ohio; in Belgium fewer than in Kansas City; and in Hungary fewer than in Pittsburgh.

Submarine Cables.—Considerable work is being done in the extension of submarine telephone cables. Emboldened by the success of the Anglo-French cable laid last year, the British Post Office has laid a cable from England to Belgium across the North Sea, which is fitted with Pupin "loading" coils; it is working successfully. American automatic telephone systems have also been taken up in England and Germany.

The Dictograph.—A sensation has been caused by the "dictograph," a peculiarly sensitive form of telephone,

which, when concealed, by carrying the conversation of suspected persons to an adjacent point has aided in the detection of crime, notably in the famous McNamara case (*AMERICAN YEAR BOOK*, 1911, p. 352). In New York City, the telephone has been used to transmit music, etc., to subscribers from motor-driven phonographs.

MISCELLANEOUS PROGRESS

Electric Furnaces.—It is asserted that the electric furnace with energy at \$16 per kw.-year is now competing with blast furnaces using coke at \$6 per ton. In Europe this method has been directed to the production of high-priced tool steels; in the United States the principal problem attacked is that of making better steel rails.

Resuscitation from Shock.—During the year the Resuscitation from Shock Commission of the National Electric Light Association, comprising several of the most prominent physicians and electrical engineers in the country, issued new rules for resuscitation based on the Schafer or prone method, valuable in all cases of suspended animation.

Utilization of Low-grade Coal.—The work of the Lehigh Navigation Electric Co. in burning coal at the mine instead of transporting it is typical of much new work to economize in coal consumption. The company has a waste product of about 500,000 tons of low-grade coal a year and this is largely to be utilized at a plant 10 miles west of Mauch Chunk, with a maximum capacity of 100,000 kw., which would use up twice as much refuse.

Hydroelectric Developments.—The water-power development in the United States is put now at 6,000,000 h. p., of which probably half is hydroelectric; about 1,800,000 h. p. is operated by some ten industrial and financial groups which give trolley service in 111 cities and electric light in 669. The total water-power development saves 33,000,000 tons of coal a year, but is not one-quarter of that available. (See also X, *Water Powers*.)

Purification of Air by Ozone.—Great advances were made in the use of electrically produced ozone for

purifying the air in banks, theatres, schools and other places where human beings congregate, but the most interesting suggestion was that of electrifying schoolrooms in the same general way, with high tension discharges, in order to brighten dull pupils. Tests made in Europe with Tesla apparatus are being repeated here.

A Sea Pilot.—Dr. N. M. Hopkins, of Washington, has invented a sea pilot for use in foggy weather. It is a cigar-shaped boat about 50 ft. long, driven from the ship itself by electric power from a 200-kw. generating set through a cable. Its purpose is to feel the ship's way far in advance and touch ice, land, derelicts, other vessels, and send back warning.

MECHANICAL ENGINEERING

WM. T. MAGRUDER

"Continued progress" would seem to be the keynote of the advances which have been made in the profession of mechanical engineering during the year 1912, rather than any marvelous discoveries or wonderful inventions. Reduction of the wastes heretofore tolerated in the operation of prime movers and power-plant machinery, and the utilization of heretofore unused fuels and materials, has added to the efficiency of the mechanical engineering industries, including the generation of power, and has increased the wealth of the world.

Fuels for the Generation of Power.

—A fuel may be defined as any substance which can be economically burned with air for the generation of heat. A heat engine may be defined as a machine for continuously changing latent heat energy into mechanical energy, or work. If the latent heat of the fuel is rendered potential outside of the engine, the latter is spoken of as an external-combustion engine; but, if the heat is generated inside of the engine, the latter is known as an internal-combustion engine. Steam engines are external-combustion engines. In them, the latent heat of the coal or other fuel that they may use is rendered potential by the combustion of the fuel in the furnace of the boiler, and this potential heat, through the medium of the steam, is transferred to the steam engine, where it is transmuted into mechanical energy. If the steam is permitted to exert its pressure upon the piston and so to the other reciprocating and rotating parts of the engine we have the ordinary reciprocating steam engine. But if the steam is allowed to pass through nozzles or

orifices, so as to cause its potential heat energy to be changed into the kinetic energy of the jet of steam flowing with a velocity of from two to four thousand feet per second, and if the jet of steam is permitted either to hit or to impinge upon the buckets or blades of a revolving wheel, the latent heat energy of the fuel which generated the steam will be changed into the kinetic energy of a rapidly revolving shaft, and so cause mechanical work to be done. This is the case of the steam turbine. If, however, the fuel be vaporized or gasified and fed to the engine, and if the fuel be there ignited in the cylinder of the engine, heat will be generated by the combustion so effected, and will be immediately changed into mechanical energy without the necessity for the use of an intermediary fluid, such as steam. Such an engine is known as an internal-combustion engine, or more commonly as a gas or oil engine. Except commercially, it is immaterial what the character of the fuel is which is fed to an internal-combustion engine, as in any case it must be gasified before it can be burned. This necessitates the use of gasifying, vaporizing or atomizing apparatus through which the solid or liquid fuel must pass and be changed into a vapor or gas before it is allowed to enter the cylinder of an internal-combustion engine; hence all such are gas engines, whether they burn gas, gasoline, kerosene, crude oil, or raw petroleum.

Waste of Fuel Resources.—In the preparation of solid and liquid fuels for use in boiler furnaces and in internal-combustion engines much progress has been made. During the past

year, in producing 500,000,000 tons of coal, we wasted or left underground 250,000,000 tons of coal, in such condition that probably it will not be recovered; that is, in getting two tons, we wasted a third ton, and the efficiency of our mining was only 67 per cent. We turned loose into the atmosphere a quantity of natural gas larger than the total output of artificial gas in all the towns and cities of the United States (J. A. Holmes, in Bulletin No. 47, U. S. Bureau of Mines). In fact, one state geologist is of the opinion that less than ten per cent. of the natural gas obtained from the resources of his state has ever been used for any useful or economic purpose. Fully 80,000,000 tons of anthracite coal are now being left behind in the mines each year, and it is estimated that, since coal mining began in this country, fully two billion tons of anthracite and three billion tons of bituminous coals have been left in the ground under conditions which make future recovery highly improbable (Charles L. Parsons, in "Notes on Mineral Wastes," Bulletin No. 47, U. S. Bureau of Mines). This means that some ten trillion horse-power hours of mechanical energy have been left in the ground in permanently wasted form. This is enough power to keep a 1,200-h. p. power plant going at full rated load every hour of the year for one million years. Proper care of the boiler and study of the subject of boiler efficiency and how it can be obtained have caused an improvement in boiler efficiency of from 30 to 40 per cent. "The entirely needless and seemingly ruthless loss of the energy from carbon in the production of coke is apparently without excuse, as the value of the recoverable contents of the coal made into coke in beehive ovens which was wasted in 1910 would have been between 35 and 40 million dollars. If all the coke made in the United States were produced in retort ovens, these would yield from the carbon now wastefully consumed approximately one million horse-power if fed to gas engines." (E. W. Parker, "The Production of Coke in 1910," *Mineral Resources of the United States*, 1910, U. S. Geol. Survey, 1911, p. 263.)

Oil Fuel.—In connection with the utilization of petroleum, one problem of importance is now being solved in this country, as it has already been solved quite satisfactorily in Europe where the economic conditions are more severe and intense, namely, a gas engine that will use crude petroleum of any kind irrespective of whether it has a paraffin or an asphalt base. Such an engine is found in the Diesel oil engine, which having been built in the countries of Europe, and occasionally in this country during the life of the patents, is now being built in increasingly large numbers in all the civilized countries of the world. It is capable of using practically every kind of liquid or gaseous fuel, including many which heretofore have defied all efforts at utilization. It is being made in sizes up to 12,000 h. p. and 2,000 h. p. per cylinder, both single and double acting and operating on either the two-stroke or the four-stroke cycles. To an American a humiliating fact is that the United States Navy Department was forced by commercial conditions and engineering lethargy to obtain the Diesel oil engines for certain of its torpedo boats from the firm of Sulzer Brothers, of Winterthur, Switzerland. Much impetus has been given during the past year, however, to the manufacture of high-pressure oil engines of both the Diesel and the semi-Diesel types. While guarantees of not better than 0.6 lb. of crude oil per horse-power per hour can be obtained, many Diesel oil engines have been reported as having generated a horse-power for an hour on the expenditure of 0.45 lb. of crude petroleum, and certain semi-Diesel engines, using kerosene, are reported to have used on test trials only 0.37 to 0.40 lb. of oil per horse-power per hour.

In 1911, 100,000,000 barrels of crude petroleum, valued at \$51,000,000, was produced in California and the Gulf states. One hundred and twenty million barrels, valued at \$83,000,000, was obtained from the other oil fields in the United States. Of these amounts, possibly nine million barrels was capable of being refined as gas oil, which is suitable for use in medium-pressure oil engines.

At present, gas oils are little used for lack of suitable engines, but the recent introduction of Diesel and semi-Diesel oil-engines promises to overcome this objection to the use of these oils.

But it is not to the coals and petroleum solely that we must look for large quantities of fuels capable of being used for the generation of power in gas and oil engines. In 1909 60,000,000 gallons of coal tar, valued at \$1,500,000, and 90,000,000 gallons of gas tar, valued at \$2,000,000, and 1,300,000 gal. of wood tars, valued at \$177,000, were produced in the United States. All these can be successfully used in high-pressure oil-engines, in which one pump supplies tar oil for use as the fuel, and a second pump supplies gas oil, or other light oil, for the purpose of spontaneous ignition. The recent decision of certain oil-producing and refining companies to curtail the production of fuel oils, followed by the notices which have been served upon users of fuel oils in oil engines that when their present contracts for fuel oil have expired, they need not look for them to be renewed, will probably cause many oil-engines which are now working on good oils to be changed over so as to permit them to be used with tar oils and other fuels which heretofore in this country have been wasted. The cause of this decision of the oil-refining companies is the increasing demand for gasoline which has been produced by the development of the gasoline motor car and commercial vehicle, as well as by the thousands of small gasoline engines used for motor-boat and farming purposes. Few people appreciate the present demand for gasoline and the economic impossibility of "repealing the law of supply and demand." It is reported that one firm of several in Chicago sold 25,000 two-horse power gasoline engines in 1911, and that their sales in 1912 will probably far exceed that figure. The licensees of another firm are reported to be shipping kerosene-oil engines at the rate of almost 1,000 h. p. capacity per day. One company made and sold 200,000 carburetors in 1910, and is still increasing its business. While gasoline has served to introduce the

gas engine to millions of people, the demand for it now far exceeds the supply. Notwithstanding the large sums of money which have been spent in experimentation, satisfactory and economic methods for the obtainment of gasoline by either the heat treatment of the heavier oils, as in the cracking process, or by a chemical process, have not been discovered. When it is remembered that almost one million gasoline motor cars were registered in the United States in 1912, and that 25 h. p. was probably the average power of each of these cars; when it is stated that there were over one million gasoline motors with an average capacity of 10 h. p. in use in motor boats and on farms during the past year, or a total of 35,000,000 h. p. of gasoline engines available for practically instantaneous use; and when it is remembered that these engines use one pint or one pound of gasoline as the probable minimum per horse power per hour when operated at full load, it will be seen that for one hour of use they would generate 35,000,000 h. p. and require 4,500,000 gal. of gasoline, valued at \$700,000. Hence, the total annual supply of gasoline, estimated to be 1,500,000,000 gal., would last but 333 hours; this means that if every gasoline engine were to be run at its rated load each day, the supply of gasoline is only sufficient to permit it to be operated for one hour per day, or for 333 hours per year. In other words, the annual output of gasoline in this country is only sufficient to operate continuously at their rated power less than five per cent. of the gasoline engines already sold and in operation. For these reasons mechanical engineers abroad, and more recently in this country, have been spending much time and money in the development and perfection of the kerosene oil and crude-oil engines, as it is confidently expected that the continuously increasing use of motor cars, motor boats and stationary internal-combustion engines will demand not only a cheaper fuel than gasoline, but some other fuel. Such a fuel we now have in kerosene.

Automobiles.—The estimate made a year ago (**AMERICAN YEAR BOOK,**

1911, p. 704) that 700,000 motor cars, including pleasure vehicles, motor trucks and wagons, had been licensed by the different states in 1911, of which possibly 200,000 had been built within a year, proved to be most modest, although it was the largest estimate published. The estimated average selling price of these machines was put at \$1,200. The actual figure for the year was \$1,246. For the year 1912 it is now estimated that the output of new pleasure cars and commercial vehicles and trucks will be 300,000, and that a total of a few over a million cars are in use in this country. The estimated selling price of these cars is \$1,083, or \$325,000,000 for the total output of motor cars in 1912, and the estimated total first cost of motor cars now in use in this country over \$1,500,000,000. Few people appreciate what this number of cars actually means, either in length of line occupied in a procession, or the power that they are capable of developing. It is reported that there are 150,000 motor cars and vehicles in England. As our population is twice as great, it appears that motor cars are three and one-half times as numerous per capita in this country as in England. Another interesting feature is that the average increase in use of motor cars continues to be upward of 20 per cent. In the last few years there has been a very great decrease in both the cost and selling prices of these machines. The law of supply and demand has changed retail manufacture into wholesale, requiring the design and operation of many special tools solely for the manufacture of some one piece of the car or of its engine. This can be illustrated by an observation made in Detroit, where in one factory one man was operating a machine which was boring two cylinders at a time, while at another factory a man was operating several machines which collectively were boring 12 cylinders. This will illustrate also why it is that American machines are so much lower in price, and yet not necessarily poorer in quality than machines made elsewhere. Again, the use of vanadium steel and other alloy steels for parts requiring great strength and supreme toughness has decreased

the weight of the machine; likewise, the use of the aluminum alloys for many large parts, as well as small, has had a similar effect in increasing the lightness of the machine and therefore decreasing the wear of, and expense for, pneumatic tires. While in England during the summer the author was told by the business manager of one of the largest English gas-engine manufacturing companies that until this year he had always used a popular make of French car, and that his annual expense for tires averaged £200, or \$1,000, and that he had now bought a car of a very popular American make which cost him under \$900 when delivered in England. The author's informant stated that so far the car had been perfectly satisfactory in every way, and that if it lasted only one year he would be saving money. It does not necessarily follow that cars made at the rate of 20,000 to 40,000 per annum are poor and cheap. Unfortunately, however, for American reputations and for the lives of the users there seem to be a number of makes of cars wherein carbon steels, malleable iron, if not cast iron, and other materials of low strength, are used, instead of vanadium steels, drop forgings, pressed steel parts, and castings of aluminum alloys.

While France was the pioneer in the automobile industry and the best machines were made in that country, Americans had to import foreign machines if they desired to have the best, but that day has now gone by. France still retains its European lead of marketing the most expensive cars, but the Frenchman, like the Englishman, has learned to turn to America for reliable low-priced cars. Our exports to France for the first four months of 1912 were \$1,497,000. This is a gain of 67 per cent. over the figure for the corresponding months in 1911. "Made in America" should be a synonym for low price but not necessarily for cheapness.

The total value of automobiles exported during the fiscal year 1912 was \$12,965,049, an increase of \$3,416,349 over the preceding year. In the same year the value of the imports of foreign cars declined from \$2,851,446 to \$1,898,843.

Aeroplane Motors.—In the issue of the *Engineering Magazine* for April, 1912, Captain Horace B. Wild, in discussing "The Engineer's Responsibility for the Air-craft of the Future," says:

The future and progress of the aeroplane and of aviation are in the hands of the engineer, and not until the engineer takes hold and applies his schooling in construction and design and practical way of obtaining results will the aeroplane be made use of generally. The comparatively crude and unreliable motor that we have at our disposal at the present time is no doubt the cause of many of the fatalities and accidents befalling the aeroplane, and these are almost entirely responsible for the late setback from which aviation has only just begun to recover. The enormous amount of money which has been expended in developing a gasoline motor such as is used in automobiles to-day ought to be an incentive to the designer to forbear spending valuable time and capital on freak motors. The automobile engine is now almost perfection, and is what might be termed thoroughly reliable.

He complains of the absence of such necessary refinements as the use of fiber tubes for conveying the high-tension leads to the spark plug from the magneto, and to the absence of facilities for the circulation of hot water around the jacket of the carburetor, which would eliminate the trouble of freezing at high altitudes. He deprecates the elimination of what some people consider to be unnecessary parts in order to reduce the weight of the engine, and at the expense of the reliability of the motor. Discussing the advantages and disadvantages of air-cooled versus water-cooled motors, preference is given to the water-cooled machine because (1) more power is obtained per unit of cylinder capacity; (2) the valves give, or should give, practically no trouble; (3) the radiators used for cooling can be so arranged as to offer very little head resistance; (4) the lubrication problem is much simplified; (5) the head resistance is less; and finally the water-cooled engine has a larger percentage of value where power, duration and economy in gas and oil are taken into consideration. In the design of engines for

aeroplanes, uniformity of torque is an early consideration. The four-cylinder engine is unsuitable for aeroplane work because the torque drops to zero twice during every revolution, and this demands the use of a flywheel, as in motor-car practice. Small cylinders, say, of less than 12 h. p. maximum capacity, and many of them, are to be preferred, so as to give uniformity of motion and a minimum of recoil at the time of ignition. In aeroplane engines it is quite proper to sacrifice power to gain uniformity of torque. It is stated that "the engine manufacturer who will knuckle down, design, and construct a really satisfactory motor would have almost the whole trade to himself, and would receive the congratulations of the industry, and have the satisfaction that he has made the aeroplane much more reliable than it was before."

At the recent Aviation Salon in Paris, practically all the various types and kinds of aeroplane engines were exhibited, from the two-cylinder, opposed Nieuport engine, to the three-cylinder Anzani and the three-cylinder rotary L'Aviator, to the 12-cylinder Renault, the 14-cylinder Gnome and the 16-cylinder Bur-lap. Their weights varied from 5 lb. per h. p. down to a minimum of 1.8 lb., or 256 lb. for a 140-h. p. Gnome engine.

Natural Versus Induced Draft.—For the generation of heat by the combustion of fuel in external-combustion plants, some means must be supplied of creating the necessary draft which will cause the requisite amount of air to be supplied to the fuel in the furnace. The oldest method is doubtless the one still found among semi-civilized peoples, and also commonly used by campers, of inducing a draft by fanning the fire or by blowing it with the breath. The creation of a draft by the use of the thermodynamic structure called a chimney came in later. In recent years the two kinds of artificial draft, namely induced and forced, have competed with chimneys for the opportunities offered to furnish draft to power plants and furnaces. The results have been marked improvements in the construction of brick chimneys, the novel use of reinforced

concrete for chimney construction, and a very decided decrease in their first cost. However, as the height and area of a chimney are fixed, once it is built, its draft-creating powers are thereafter solely dependent upon the temperature of the hot gases passing through it and the amount of air permitted to enter at the bottom. Furthermore, it delivers its gases and smoke at one constant level, which must be sufficiently high to prevent the smoke being blown directly into the windows of surrounding buildings. When a change of fuels is decided upon, there is usually a demand for increased draft with which to burn the poorer and therefore cheaper fuels. Also, when more power is required, more fuel must be burned and more draft must be created. In either case the demands may exceed the possibilities of the chimney and an additional stack will have to be built; whereas, the use of the induced-draft system would have meant simply a higher speed of rotation of the fan by which the burned gases are sucked from the furnace through the boiler and delivered to the atmosphere either through a short delivery pipe, or stack, or through a taller chimney so as to deliver the gases at an elevation above the roofs of surrounding buildings and where they would be the least objectionable. During the past year a number of large induced-draft fans have been installed in connection with economizers. Some of these fans have been over 12 ft. in diameter. The engineering problems which once were so difficult of solution no longer present exceptional difficulties. The present problems are chiefly commercial or structural and demand good judgment rather than good designing ability.

Smoke.—The deposition of smoke upon one's person or possessions may frequently create comment; but until recently no serious and complete economic study has been made of the tremendous losses incident to the incomplete combustion of coal. We have all been selfish and felt that so long as we were not seriously annoyed by what some people have been so forward as to speak of as a nuisance, we did not care how much the

other fellow wasted his money and fuel by incomplete combustion. The great cry has been against "smoke," whereas the present cry is against the losses always incidental to the creation of smoke. The reason for this is that smoke is visible and dirty, and therefore a nuisance; whereas the hydro-carbon and carbon monoxide gases which accompany the smoke are usually invisible and therefore create no comment. It is doubtful if a chimney belching forth large volumes of densely black smoke is wasting over one or two per cent. in the solid carbon which it is delivering to the atmosphere; whereas at the same time it may be wasting from 20 to 40 per cent. of valuable combustible gases which the owner has paid for and from which he might have obtained some heat, if he had employed a more skillful fireman, or had used a better furnace setting, or a mechanical stoker for supplying fuel to the furnace. The presence of smoke is therefore properly taken as an indication of the presence of valuable combustible gases, and of bad furnace conditions and operation.

In the *Canadian Engineer* is reported a paper by Dr. John S. Owens before the International Smoke Abatement Congress on establishing a "smoke standard." He states that smoke may be measured in any one of six ways, but that the only practical one is to compare the ratio of the density of the smoke to some standard by optical means. He has designed an instrument in the form of a telescope having a revolving eccentric disc fixed in the optical system at a point which may be brought into the focus of both object-glass and eye-piece. The disc contains a number of graduated smoked glasses arranged in cells around the center. The glasses are numbered in the ratio of their thickness. By comparing the opacity of the smoke issuing from a chimney with the opacity of the smoked glasses, and dividing the number of the glass whose opacity corresponds to the density of the observed smoke by the diameter of the chimney, the actual weight per cubic foot of soot in the smoke can be obtained.

Within the past year the Department of Industrial Research of the

University of Pittsburgh has begun the important study of the smoke problem from the broadest standpoint and with consideration of the technical, economic, sanitary, and legal aspects of the subject. Each of the lines of investigation is being carried on by one or more specialists and includes not only the prevention of smoke, but its effects upon health, plant life, buildings, the moral life of the people, and the increased cost of living due to the dirt deposited and damage done. By the coordination of these various researches by competent experts in their respective lines it is expected that the problem of the prevention of smoke will be put upon a scientific foundation and that the science will be followed universally by the art of smoke-prevention. This is not solely an engineering problem but an economic and social one which must be solved by the engineer in response to the demands of both the economist and the sociologist. Furthermore it is an engineering waste which can be prevented, but whose waste cannot be utilized, as is so frequently done with other waste products; besides which, it creates both industrial and social wastes which are distinctively opposed to the efficiency of the body politic. (See also VII, *Municipal Engineering*.)

Gas Producers.—For something like 50 years gas producers have been used for the generation of gases of low heating value from solid fuels, but only within the last 15 years have many serious attempts been made to use the producer for the generation of gases for power uses. The reason has been that it has been so difficult, if not impossible, to remove the dust and tar from the gas and so prevent its deposition upon the valves and cylinder walls of the gas engine. Among the various devices that have been tried may be mentioned washing the gas by causing it to ascend through a tall scrubber down which water was being sprayed, or by causing water and the gas to enter at the center of a centrifugal fan and be thrown out by the force produced. Neither of these methods has met with complete and satisfactory acceptance, on account of their inefficiency. The methods for

removing the dust and tar by inertia and centrifugal force not having always proved satisfactory, the most recent method is that of impact, whereby the particles of dust and tar mingle with the cooling water and are projected with high velocity from the vanes of one fan against the vanes of a second circumscribing fan traveling with the same velocity, but in the opposite direction. The various devices for scrubbing producer gas have worked so satisfactorily for so many months in so many plants and on such a variety of bituminous and semi-bituminous coals, that it would seem as if the power-gas producer could be hereafter specified and used with more confidence. Cases are reported where the fires have not been out for many months and where the cost of operation has not exceeded that of the ordinary boiler plant of the same size.

The increasing uses of oil in boiler furnaces for the generation of steam and in oil-engines for the generation of power have caused some people to think that the field of the gas producer is limited to the generation of gas solely for heating and metallurgical uses. In the past year we have seen the increasing use of the power-gas producer not only for the combustion of anthracite and coke, but also for the combustion of lignites and bituminous coals, and more recently of even peat briquettes, in producers of the suction type. As in many other lines of industry, this is an economic problem of national importance.

Power in the Iron and Steel Industries.—Although the rolling mill has been used in the iron industry for 125 years, the definite knowledge concerning the amounts of power required to roll metals of various sizes, temperatures, and reductions per pass with rollers of different sizes, has not been as great as the knowledge which has been made available by experimental study in parallel lines of industrial effort. The introduction of the electric motor, with the accompanying ease with which the power being used could be determined, has enabled foremen, master mechanics, and superintendents to keep records of the maximum and total powers which were

being used in the rolling of metals. This has caused others to obtain the desired information as to variations in power by the use of the steam-engine indicator, preferably the continuous indicator, which draws diagrams indicating the amounts of power which are developed at each stroke of the steam engine.

This complex subject was ably discussed by Harold Wheatley in the issue of the *Engineering Magazine* for April, 1912. It seems that the kind of machine and its structural design has much to do with the power required to roll metal and reduce it a given amount at a given temperature, and that possibly the reason for one piece getting stuck in the rolls, while previous ones have passed, may be that the roll necks become overheated and expand, creating an excess of friction and an excessive demand for power which the engine is not capable of delivering at the instant because of both the kinetic energy of its flywheel and the pressure energy of the steam upon its pistons; the engine therefore slows down and stops, before the piece had been passed completely through the rolls. "The friction losses on rolling mills are so varying that the power constants derived from experiments on actual mills are not true indexes of the power required per unit of displacement actually to reduce the metal, although they may serve fairly well as guides in the selection of suitable mill drives." It would seem, as was pointed out in the *AMERICAN YEAR BOOK* for 1911 (p. 712), that the problems pertaining to friction and lubrication, to the wear of the journals and bearings, and to the economic use of efficient lubricants, are common to all classes of machinery, and have much to do not only with the upkeep of a machine, but with its output, which is of still greater importance.

But it was not alone in the rolling-mill industry that reluctance to experiment has been shown. In the various branches of the steel industry, steel-plant engineers have clung to machines whose worth had been proven until the demand for increased output has necessitated a change. It is difficult to say how many projected new processes have failed or been

made to fail for lack of suitable and adequate machinery. This is the more singular when it is remembered that the growth of the steel industry has been not only rapid but spectacular. A comparison, however, between equipments which have been retained in some steel mills for many years when they should have been scrapped with the modern, more powerful, more rapid, electrically driven equipments which have been recently introduced, will show that changes have been made not only in the power and size of the machines but frequently in their refinements. Ninety per cent. of the iron production of 25,000,000 tons made per annum is used in the production of rails, structural shapes, plates, bars, and the other iron products demanded by the industrial world. To manufacture this huge output at the lowest possible cost has demanded equipment of corresponding size and power. The large rail mill of the Indiana Steel Co. at Gary, Indiana, turns out 3,500 tons of rails in 24 hours. It is evident that hand labor would be inadequate. Ample power must be available for each and every one of the many operations once performed by hand or by water or steam power. This demands power plants of large size; and, if the machinery is operated by steam engines, then they must be capable of caring for suddenly applied loads and of carrying them for some minutes. Furthermore, the machinery must be as nearly as possible absolutely automatic. It is not solely in the steam engines and motors for driving the rolling mills with their sudden variations in load that we find the greatest recent improvements, but in the size and refinements which have been made in all the accessory machinery of rolling mills and steelworks, and including the hoisting machinery with which the large quantities of ore are now hoisted.

Probably the greatest progress and saving which have been made in the iron industry in recent years have been made in the blast-furnace plants, progress not only in the reduction of the quantities of ore and flux required per ton of pig made, but in such saving of the waste heat of the furnace as to provide not only ample power

for the blowing engines, pumps, hoisting and other accessory machinery, but also large amounts of power for sale. It is estimated that a furnace having an annual output of 100,000 tons, or 300 tons per day, will produce an amount of gas available for power purposes equivalent to the heat energy from 102 tons of good bituminous coal burned every 24 hours, or to a continuous output from gas engines of 11,000 brake h. p. Deducting 3,000 h. p. for operating the blowing engines and other auxiliaries, 8,000 h. p. of excess power will be available for sale or other uses. This is the equivalent of one-thirteenth of a horse power of continuous power for each ton of annual output of pig iron, or 2,000,000 b. h. p. continuously available for the entire production of the country. At a few places this waste power is being utilized. At the Newcastle-on-Tyne Electric Supply Co. on the northeast coast of England, 53,000 h. p. is being developed by steam power from the waste gases from the blast furnaces and coke ovens. If this gas were used in gas engines, over 100,000 h. p. would be developed and 100,000 tons of coal saved annually. At Heinitz, in the Saar district of Germany, 13,000 brake h. p. is being obtained from the waste gases of coke ovens of the state collieries. The Rhenish Westphalian Electricity Works in Essen, Germany, has three gas-power plants obtaining their supply of gas from neighboring iron works. Similar generation and sale of gas-power in this country have been considered, but so far our most up-to-date blast furnaces have found use for all their excess power in their own plants.

The Turbine Pump.—Although invented by Prof. Osborne Reynolds, of Owens College, Manchester, in 1875, the turbine pump did not come into extended use until the end of the last century. Within the past few years its efficiency and the pressures at which it can be economically used have been so greatly increased that it is difficult to mention uses to which it cannot be put both economically and conveniently. The old-fashioned centrifugal pump had efficiencies seldom reaching 60 per cent., frequently giving only 40 per cent. or less after

a few months of use. The modern multi-stage turbine pump, with shrouded vanes in the impeller and diffusers in the surrounding case, is capable of giving efficiencies of upward of 80 per cent. under the best conditions, and still higher ones have been reported. It occupies much less space; and, on account of its desired high speed of rotation, it lends itself to union with either a steam turbine or electric motor. ("The Evolution of the Turbine Pump," by E. Hopkinson and A. E. L. Chorlton, *Proc. Inst. Mech. Engrs.*)

Turbo-blowers and Compressors.—The marked success and large use of the steam turbine which uses steam expansively naturally led engineers to consider the possibility of reversing the operation and of compressing air by the same means, hence it is not surprising that Hon. Charles A. Parsons of England and Prof. A. Rateau of Paris, the two most successful designers of steam turbines, were among the first builders of centrifugal blowers and compressors on a commercial basis. The axial-flow and radial-flow designs of steam turbines were naturally duplicated by their inventors in the designs of their compressors. It is interesting to note that the resistance of the revolving discs of the axial-flow blowers is greater than the resistance of the discs of the radial-flow blower; and that the latter "transmit energy to the air practically over their whole area from center to periphery, and hence a greater amount of energy can be transmitted per stage than is possible with axial-flow blowers, in which air or gas is seized and compressed only at the periphery of the impeller" (Franz zur Nedden, in the *Engineering Magazine*, July, 1912, *et seq.*).

One of the most remarkable and notable uses of the turbo-blower has been its recent introduction into blast-furnace and steel-works practice in the place of reciprocating blowing engines. The turbo-blowers and compressors may be directly driven by either a steam turbine or an electric motor. A recent installation is of a five-stage Curtis steam turbine directly connected to a three-stage compressor which delivers either 35,000 cub. ft. of free air per minute against a

pressure of 15 lb. per sq. in. when developing 2,700 h. p. and when running at 2,500 revolutions per minute, or else 40,000 cub. ft. of free air per minute against a pressure of 30 lb., requiring 5,400 h. p. and a speed of 3,250 revolutions per minute. Steam at 150 lb. pressure is used and exhausted into a vacuum of 28 in. of mercury. The impellers are 54 in. in diameter. The floor space occupied by this turbo-compressor unit is 26 ft. long, 16 ft. wide, and 11 ft. high, or 4,576 cu. ft. of circumscribing volume, and one-fourteenth the space required for a twin tandem gas-engine driven compressor, or a cross-compound reciprocating steam engine of the same capacity. The turbo-compressor weighs 150,000 lb., whereas the gas-driven unit weighs 2,000,000 lb. (R. L. Streeter, in the *Engineering Magazine*, August, 1912, *et seq.*.)

Marine Engineering.—The most interesting event in the past year in the mechanical engineering of ships has been the successful and commercial use of the Diesel oil engine for the propulsion, operation and generation of electricity in modern and very up-to-date freight steamers plying between ports long distances apart. Reference is made to the putting into commercial service of the *Selandia* and the *Jutlandia* of the Danish East Indian Steamship Co. These ships are propelled by two reversing, four-cycle, marine-type, high-speed, Diesel oil engines, provided with their own Diesel-engine driven air compressors and with Diesel-engine driven electric generators. They are intended to run between the East Indies and ports of northern Europe and America. Their machinery not only weighs less, but requires less engine-room space. Their supply of fuel occupies a smaller amount of space and less valuable space than would be required for coal. Their steaming radius is larger and their cost of operation is smaller.

Both the *Selandia* and the *Jutlandia* have four-cycle engines. They were built and engined by Barclay, Curle & Co. on the Clyde in Scotland. The *Monte Penedo* has two-cycle engines. It was built by the Howaldt Works at Kiel, Germany, for the Hamburg South American Steamship Co., and its engines were supplied by

the Sulzer Brothers, Winterthur, Switzerland. The vessel is 350 ft. long, 50 ft. wide, and 27 ft. deep. It has a freight capacity of 4,000 long tons and a speed of $10\frac{1}{2}$ knots per hour; its power plant comprises twin Sulzer-Diesel main engines and two auxiliary Sulzer-Diesel engines direct connected to an electric generator and a compressor respectively. The two main engines are four-cylinder, single-acting, two-cycle, make 160 revolutions per minute, and develop 850 brake h.p. The cranks are set at right angles. The compressor pumps are of the three-stage type. The net weight of each main engine is 55 tons, or with all pipes, air flasks, exhaust-silencer, etc., 77 tons; the air compressor and motor weigh 6 tons, making a total engine weight of 160 tons. The fuel consumption of each engine on a 48-hour run at normal working, including the driving of the pumps for the various purposes aboard ship, was 0.46 lb. per brake horse power hour. The actual consumption of fuel for propelling the ship was much less.

One has to stand only one watch in a Diesel two-cycle oil-engine driven ship when it is occupied in local traffic requiring frequent stops, with the attendant stoppage and reversal of the engine and ship, to appreciate the possibilities for the successful use of the oil engine in ships of all kinds. When it is remembered that oil seems to be as universally and generously distributed by nature as coal, and when the ease in transportation and storage is considered, it is not to be wondered at that ship owners are turning their attention to the use of oil as fuel for internal-combustion marine engines. It is to be regretted, however, that Americans are forced to go to Europe in order to see the Diesel engine in its more advanced state and as used for the propulsion of ships.

The huge increases in the power of the battle cruisers of the two leading and competing navies of the world mark a most interesting advance in marine power-plant engineering. Ships which can develop only 40,000 h.p. may now be considered to be weak when compared with ships like the *Lion* and *Indefatigable* of the British navy, and with ships like the

Moltke and the *Von der Tann* of the German navy. These are capable of developing from 80,000 to 100,000 h.p. each and of obtaining speeds of from 28 to 33 knots an hour. It is of interest to note that these ships can use either oil or coal in the furnaces of the high-pressure boilers which supply steam to the steam turbines which rotate the three or four propeller shafts of each ship. The difference between a "battle cruiser" and a "battleship" in both power and speed can be understood by comparison of these ships with the United States battleships *Florida* and *Utah* of our navy. The former on her full-speed trial on March 26, 1912, attained 22.08 knots per hour for four hours. She was designed for a speed of 20.75 knots and for her four main Parsons turbines to develop 28,000 shaft h.p. when making 330 revolutions per minute. She has 12 Babcock and Wilcox water-tube boilers arranged in three batteries in separate water-tight compartments. (H. B. Gregory, in *Transactions of American Society of Naval Engineers*.)

Extrusion of Metals.—In the July, 1912, issue of *Machinery*, Friedrich W. Siepke describes the hydraulic extrusion presses built by Friedrich Krupp A.-G., at the Grusonwerk in Magdeburg-Buckau. In this process, instead of pouring molten metal into the press cylinder and ramming it out through suitable dies, it has been found best to cast the metal blocks in long sections in permanent molds of close-grained metal, free from flaws and smooth of surface. The blocks are then cut up into pieces of suitable size for the press, heated in special furnaces to from 1,650 to 1,800 deg. F. clear through to the center, and then transferred by overhead trolley to the adjacent press. The latter consists of the hydraulic cylinder, pressure chamber or extrusion cylinder, dies, and a head which holds the dies tied to the hydraulic cylinder by four heavy connecting bars. The pressure chamber is located between the head and the hydraulic cylinder. The latter is a steel casting and is lined with a copper bushing. The pressure chamber is forged from Krupp special steel and has a jacket made of a steel casting, through

which jacket the heated gases from the furnace beneath the pressure chamber pass and so keep the chamber heated to the required temperature of 600 deg. F. The dies of the shape for the extruded form are held in the head, which takes the pressure during the extrusion. An auxiliary hydraulic cylinder is provided for removing the metal left in the pressure chamber at the end of each stroke.

Four skilled men operating one furnace and press can extrude 2,000 lb. per hour of simple shapes with a small press, and 3,500 lb. per hour with a larger press. With forms of irregular shapes and with tubing of difficult sections, a smaller output is obtained. A pressure of 60,000 lb. per sq. in. is required. The advantages over the more usual rolling and drawing processes are that shapes may be produced which cannot be rolled under any circumstances. On account of the high pressure under which the metal is extruded it becomes more compact, its strength is increased, its surface is made smooth and free from all defects and to accurately gauged dimensions, and it requires little, if any, subsequent finishing. The process takes only three minutes to perform the complete cycle of operations on a block of the metal.

Safety in Shops.—It is frequently stated in Europe that the reason why we have so many accidents in this country is because we value human life and limb so cheaply, and that we lack the paternalism which is so common in European monarchies. Whether this criticism is just or not is immaterial here. But what is of importance is that manufacturers have learned that it is poor economy to maim or kill valuable employees and be mulcted by the courts and lawyers for the damages done. The U. S. Steel Corporation has prepared specifications defining its safety requirements for various classes of equipment. The completeness of these may be gathered from the general clause which reads:

All gearing shall be completely inclosed with substantial cast-iron or sheet-steel covers, so designed as to be readily detachable; all couplings, set-screws, keys, bolts, etc., in moving parts must be countersunk or covered in such

a way as to eliminate danger of accident; unused portion of key-ways to be filled so as to present a smooth surface.

There are also detailed specifications for each of the various classes of machine tools. It is evident that this corporation does not propose to take any chances in this matter but that it will require all bidders for future machinery to conform to its specifications, regardless of how se-

vere or novel they may seem to appear. To prevent history from repeating itself it is only necessary to prevent the repetition of the events which went to form history. This statement applies equally well to events in shops and factories. It is evident that if the possibility of a man getting his body or clothing caught in a machine is removed, that the possibility for accidents will be correspondingly decreased. (David S. Beyer, in the *American Machinist*.)

AERONAUTICS

J. ANSEL BROOKS

General Survey of Progress.—Progress in aeronautics during the past year was not marked by any spectacular discovery, but by a steady advance in many branches of the science. The year witnessed distinct gains in several directions: in the further development of the existing types of machines; in the correction of mistakes of design, etc., made in the machines of 1911; in the advancement of scientific research; in safer flying; and in a general willingness of all to coöperate in making laws and granting licenses. Although very little or no improvement was brought about in the helicopter and ornithopter, advance was made in developing the dirigible balloon, the aeroplane (biplane and monoplane), and the hydro-aeroplane. The conservative nature of the year's progress is attested by the fact that among what were considered the notable features at the New York Aeronautic Show in May, were the complete absence of "freak" aeroplanes, and the number of good American aeronautic motors, in the development of which remarkable progress has been made.

During the year the opportunities for the study of aeronautics have increased. At least two more American universities presented courses in aeronautics. But in laboratory testing and research America has done little; whereas in England, France, Germany, and Russia the excellent work of former years has been continued, not only in university laboratories, but in private laboratories also. An accession to Germany's equipment was

made possible when the Reichstag in May appropriated \$62,500 for the establishment and maintenance of an experimental institute of aeronautics.

During the year the best literature on the subject has appeared in the magazines and in the transactions of scientific societies. Many well-known scientific men have contributed articles on such subjects as stability (automatic and mechanical), safety in flight, new controls, details of construction, air conditions, flight theories, etc. The important work of studying meteorological conditions has continued (see XXV, *Meteorology and Climatology*). Many illuminating articles on atmospheric conditions, air holes, air currents, etc., have appeared. The information thus far gained on these matters is invaluable, and the pursuance of these lines of study may make possible the solving of an important problem confronting aviators to-day—the crossing of the Atlantic in a dirigible balloon, or in an aeroplane. It has been stated by those who have investigated the ocean air currents that a dirigible balloon with a motor speed of 25 miles an hour could cross from Boston to London in $4\frac{1}{4}$ days, flying about 3,300 ft. high; and that an aeroplane with a motor speed of 50 miles an hour could cross from St. John's to Valentia, Ireland, in 31 hours.

One of the most significant events of the year was a unique competition held on June 2 at Paris, France, for machines driven by man power, "aviettes," as they are called. A prize of

\$2,000 was offered for the first machine to fly about 33 ft., propelled by man power. None of the 20 aviettes that entered the contest was successful, but later a flight of several feet was accomplished by one of the contestants.

The increase of interest shown in the subject by engineers and scientific men, together with the remarkable flights made during the year, has done much toward bringing the subject of aeronautics before the public as a fast growing practical science.

Spherical Balloons.—Many balloon ascensions took place during the year, but the sport has received very little impetus and the interest in such ascensions has not increased. A long flight of 1,214 miles was made Jan. 6-8, by Emile Dubonnet in France. The important races were, the Gordon Bennett Elimination Race, and the Gordon Bennett Race. The American Gordon Bennett Elimination Race, which started at Kansas City, was won by Captain H. E. Honeywell and Roy F. Donaldson in the Uncle Sam (80,000). The distance covered was 914 miles in 34 hr. 50 min. The Gordon Bennett Race was held at Stuttgart, Germany, on Oct 27. America was represented by Capt. H. E. Honeywell, John Watts, and John Berry, with William Assman as substitute. This race was won by France, America taking third place. The records were:

First, Maurice Bienaimé (France), 2,200 km. (1,366 miles) in 46 hours.

Second, Alfred Leblanc (France), 2,100 km. (1,304 miles) in 45 hours.

Third, Capt. H. E. Honeywell (U. S.), 1,700 km. (1,056 miles).

Dirigible Balloons.—America has made no progress during the year in developing the dirigible balloon, and few flights have been attempted here. The Vainman dirigible balloon, which was built with the idea that it should try to cross the Atlantic, exploded in the air at Atlantic City on July 2, before starting on the trip. The five occupants were killed. The greatest progress was made in Germany, France being second. At the beginning of the year Germany owned 30 dirigible balloons, France 21, and Russia eight. The Victoria Luise (43

miles an hour), recently bought from the Hamburg-American Line by the German Government, made daily trips during a part of the year between Frankfort and Düsseldorf. The trip was made in about three hours, and 28 passengers could be carried. The same balloon, carrying four officers, 11 passengers, and her crew of ten, flew from Hamburg over the North Sea and circled the island of Nordey. It has also made an eight-hour sea trip of 350 miles. The Hansa (46 miles an hour) of the Hamburg-American Line, with motors of 480 h.p., made in September a trip over water to Denmark and Sweden, stopping at the Danish capital and also at Malmo in Sweden. On July 20 the Zeppelin III completed a 24-hour cruise. Accidents destroyed several German dirigible balloons, but no lives were lost. These accidents were caused not by any fault in the design of the ships, but by the poor management and handling of them. In September Germany had 27 hangars, in different parts of the country, for these balloons. As for French achievements, on July 12 the dirigible balloon Conte, carrying nine passengers, accomplished a scouting flight of 16 hours; and on July 17 the Dupuy-de-Lome on her trial trip remained in the air for 17 hr. 10 min., with nine passengers. The French appropriation for dirigible balloons for the year was \$1,600,000.

It is interesting to note that the dirigible balloons which are owned by England, France, Germany, Italy, and Japan have increased in size, speed, and durability; and the recent remarkable trips have proved that they are to be used for carrying passengers, for carrying mail, and in warfare.

Aeroplanes.—No radical changes were made in the aeroplane during the year. The details of construction were greatly improved, and a marked advance was brought about in the dependability of the product of the best manufacturers. Steel is now being used in construction to an appreciable extent. No type of machine has yet been adopted as being best fitted for any particular purpose, unless it be the monoplane, which has shown its superiority in speed.

A study of the machines which entered the English military competition shows some interesting figures. The area of the supporting surfaces varied from 100 to 700 sq. ft.; the wing span varied from 32 ft. 6 in. to 53 ft.; the horse-power varied from 35 to 120. Eighteen of the motors were air-cooled, while 13 were water-cooled. Thirteen of the motors were of the revolving type, nine of the vertical type, and three of the diagonal type. Only eight of the machines had reduction gear; the remaining 23 had direct drive. One of the striking features of these machines was the great increase in strength, the greater power thereby provided, and consequently the heavier loading of the wings per square foot of surface. Stranded wire cables have taken the place of single wires.

Several successful monoplanes were brought out in Europe, designed particularly for speed. The cigar-shaped bodies of these machines give them a stream-line form and also greater strength. The Duperdussin was the most notable example of this type. As a result of the offer of \$10,000 for an American speed plane to be entered in the Gordon Bennett Race, an American monoplane (with a foreign motor) was designed and built, but it did not fly for the Gordon Bennett trophy. On many, if not on the majority, of the new biplanes, the propeller or propellers have been placed in front, machines thus designed being called "tractors." A few new tailless machines similar in design to the Voisin "canard" appeared during the year. Among the most interesting of recent experiments are those now being made with a plane so shaped as to realize a soaring wing and to develop a forward "drift," as well as a lift. (See also *Mechanical Engineering, supra.*)

Wireless Messages from Aeroplanes.—The sending of wireless messages from aeroplanes while in flight has now been accomplished. During the year many messages were sent from planes which were flying 30 or 40 miles an hour, and received at points several miles away. It is said that in France a message was received from an aeroplane which was flying at the rate of 30 miles an hour, at a point

50 miles away. The year has not passed without the introduction of novelties, such as the taking of moving pictures from an aeroplane, and the dropping of a man with a parachute from a flying aeroplane.

The Aeroplane Industry.—Facts relating to the sale of aeroplanes and the establishment of schools for the training of aviators are significant of the growing interest in flying. During the first six months of the year some 40 new aeroplane manufacturing companies were reported as having been formed in America, yet our output of machines was not nearly so great as that of France. The American exportation of planes for 1912, however, showed an increase, due in part to the foreign purchase of hydro-aeroplanes. Many aviation schools were opened during the year, but unfortunately, in America at least, many of them were merely money-making schemes with a poor equipment and inexperienced instructors. The reliable schools had a successful year; at one of them 240 flights were made in one day.

Flights.—As was the case in 1911, the most remarkable feats in flying were accomplished in Europe. This fact was due to the greater interest shown abroad by aviators, scientific men, the military, and by the public in general. The exact number of aviators in the different countries is not known, but on Aug. 31 France had issued 1,000 licenses to aviators, and on Sept. 14 the United States had issued but 173. Although these figures, of course, do not include the unlicensed aviators, it is probably true that France has a greater number of these also. Nearly all of the records have been bettered during the year; in fact, some of them have been broken so often that it is difficult to tabulate completely the official records. Some of the noteworthy flights of the year are as follows:

Jan. 27.—Molla at Douzy, France, with five passengers (average weight 151 lb.); remained in the air for 1 hr. 6 min.

Feb. 17.—Robert G. Fowler arrived at Pablo Beach, Florida, having flown from the Pacific coast to the Atlantic over the Southern States. He covered 2,517 miles in 122 days, but

on many of these days he could not fly, because the weather was wholly unpropitious. Rogers's flight from coast to coast in 1911 extended over about 3,391 miles.

March 1.—Jules Védrines at Pau, France, flying a 140-h.p. Deperdussin monoplane, covered 170 km. (105.6 miles) in 1 hr. 1 min. 55 sec., at a speed of about 102 miles an hour.

March 7.—Henri Salmet flew from London to Paris without a stop in 2 hr. 57 min.

March 11.—Maurice Tabuteau flew from Pau to Paris, about 720 km. (447 miles), in 5 hr. 10 min. plus 5 hr. 15 min. for two stops.

April 30.—Bedel in France, competing for the Pommery Cup and a \$1,500 prize offered for the longest flight in a straight line, made between sunrise and sunset, covered 700 km. (435 miles).

May 24.—Paul Peck at Nassau Boulevard, Long Island, made an American record for time in the air. Flying an American machine with an American motor, he remained in the air 4 hr. 33 min. 15 sec.

June 30.—Lieut. Blaschke, with a passenger, ascended at Vienna, Austria, 4,360 m. (14,304 ft.). The former record was 12,792 ft.

July 5.—George Legagneux at Compiègne, France, made a record with a passenger, remaining in the air one hour, and covering 124 km. (77 miles).

July 13.—Jules Védrines in the Gordon Bennett Elimination Race held in France flew in a Deperdussin monoplane 200 km. (124.3 miles) in 1 hr. 10 min. 50 sec., at an average speed of 105.3 miles an hour.

July 20.—George Legagneux in France flew in a Zens monoplane with a passenger 136 km. 695 m. (85 miles) in one hour.

Aug. 9.—The Gordon Bennett Race took place at Chicago. Challenges were received from America, France, Belgium, Holland, Switzerland, and England. The course was 200 km. (124.3 miles), each lap being 4.142 miles. Three French aviators were the only ones to compete for the trophy, which was won by Jules Védrines in a Deperdussin monoplane (140 h.p.). Maurice Prévost was second, and André Frey, third. The course was covered by the winner in 1 hr. 10 min. 56.85 sec., at an average speed of 105.04 miles an hour. The average speed in last year's race was 78.728 miles an hour. The three planes in this year's race were monoplanes, two Deperdussin monoplanes and one Henriot monoplane, and the

motors were Gnome motors with horsepower of 100 and 140. On the same day Védrines flew 20 km. (12.42 miles) in 6 min. 55.95 sec., at a speed of 107.4 miles an hour.

Sept. 7.—Roland Garros in France ascended 16,240 ft.

Sept. 10.—George Fourny flew continuously from 5.53 a.m. to 7.11 p.m., covering 1,010 km. (628 miles).

Sept. 17.—George Legagneux made a new altitude record of 17,876 ft. (world's record).

Oct. 6.—Pierre Dancourt, in France, competing for the Pommery Cup, covered about 570 miles, a record for a single day's cross-country flight.

Oct. 6.—Lieut. John H. Towers made an American record for time in the air. Flying a Curtis hydro-aeroplane he remained in the air 6 hr. 10 min. 35 sec.

Dec. 18.—Roland Garros flew from Cape Bon, Tunis, to Trapani, Sicily, a distance of about 160 miles.

Records.—Official aeroplane records at the close of 1912 were as follows:

World's Speed Records.—J. Védrines (Deperdussin), Chicago, Ill., Sept. 9, 1912, 107.4 miles per hr.

G. Legagneux (Zens) with one passenger, Compiègne, France, July 20, 1912, 85 miles per hr.

C. Nieuport (Nieuport), with two passengers, Vienna, Austria, June 30, 1912, 64.8 miles per hr.

Mandelli (Nieuport), with three passengers, Vienna, Austria, Aug. 16, 1912, 65.88 miles per hr.

World's Duration Records.—G. Fourny, France, Sept. 10, 1912, 13 hr. 18 min., 628 miles.

Pierre Dancourt, France, Oct. 6, 1912, cross-country flight, 570 miles.

World's Altitude Records.—Roland Garros, Tunis, Africa, Dec. 11, 1912, 19,032 ft.

Lieut. Blaschke (Lohner), with one passenger, Vienna, Austria, June 29, 1912, 14,304 ft.

Lieut. Blaschke (Lohner), with two passengers, Vienna, Austria, June 29, 1912, 11,742 ft.

K. Sablatting (Bombard), with three passengers, Berlin, Germany, Sept. 27, 1912, 3,674 ft.

American Duration Records.—Lieut. John H. Towers (Curtiss hydro-aeroplane), Annapolis, Md., Oct. 6, 1912, 6 hr. 10 min. 35 sec.

Walter E. Johnson (Thomas biplane), with one passenger, Bath, N. Y., Oct. 31, 1912, 3 hr. 51 min. 15 sec.

American Altitude Record.—Harry B. Brown, with one passenger, Staten Island, Nov. 5, 1912, 5,300 ft.

Hydro-aeroplanes.—The past year has seen a world-wide interest shown in so-called "marine flying." Aeroplanes with attached pontoons made flights in 1911, but in January, 1912, took place the first successful public flight of a machine with a pronounced boat-shaped float, resembling the present hydro-aeroplane. What the first Rheims meet did in 1909 for aviation, the hydro-aeroplane meet at Monaco, March 24 to 31, has apparently done for "marine flying." The first demonstration in Europe of the success of the hydro-aeroplane was on Feb. 6, by an American in an American machine. A new type of hydro-aeroplane appeared during the year—a monoplane with attached floats. On Sept. 7 Charles Weymann flew with a passenger from Antwerp, Belgium, to Vernon, France, a distance of 375 miles, in a Nieuport hydro-monoplane. Aug. 24-26 a very successful hydro-aeroplane meet was held at St. Malo, France; and in the same month the first American hydro-aeroplane meet took place at Chicago, but the entries at the latter were few.

On Jan. 27 the Aero Club of America Trophy was awarded to Glen H. Curtiss for the successful development of the hydro-aeroplane. This trophy is presented for the most substantial achievement in the cause of aviation during the year. Though hydro-aeroplanes are now made in France, Germany, and England, they all resemble the American Curtiss machine.

Military Aviation.—While progress in military aviation was made in America during the year, we are yet far behind France, Germany, England, Russia, Italy, and Austria in developing this branch of the science of aeronautics. In the September issue of the *Infantry Journal*, Capt. Beck had an extended article on military aviation. He says: "Aviation is of such importance that the nation which neglects it must not hope for military success in the event of war with another nation properly equipped with heavier-than-air crafts." In America the aviation squad of the Signal Corps now have winter quarters at Augusta, Ga., and summer quarters at College Park. Last winter our army aviators made

436 flights, the total time in the air being 81 hr. 18 min. In July the army aviators made 360 flights, the total time in the air being 40 hr. 5 min. The number of flights for the year ending June 30 was 1,500, the total time being 259 hr. 16 min. The Corps purchased several new aeroplanes, all of which were biplanes. In fact, the Signal Corps uses only biplanes. In this connection it is interesting to note that during 1912 the English and French Governments put a ban for a time on all military monoplanes, considering them more dangerous than biplanes. During the year military quarters were established in Manila.

On the recommendation of the Secretary of the Navy, President Taft on Dec. 19 appointed a commission of 19 members to investigate, for report to the President as a basis for recommendations to Congress, the necessity or desirability of establishing a national aerodynamical laboratory, and the scope, organization, location and cost of such an institution. The chairman of the commission is Dr. R. S. Woodward, president of the Carnegie Institution of Washington. The commission includes officers of the army and navy, prominent engineers, and members of Congress.

At the mimic war held in Connecticut in August, perhaps the most important feature was the scouting of the aviation squadron. Three machines were used, two belonging to the regulars and one to the New York National Guard. During these maneuvers the work of Lieut. Foulois and Lieut. Milling demonstrated how great the value of the aeroplane may be as a means of scouting. Several times these aviators returned to camp after about an hour of scout duty with information which it would have taken several hundred mounted men many hours to collect. It has been shown that the service requires that the aviators should be not mere chauffeurs, but men trained in the art of war, in topography, military reconnaissance, practical and theoretical wireless telegraphy, and in the writing of messages containing military information.

During the year the dirigible balloon and the aeroplane were success-

fully used by Italy in Tripoli in the war with Turkey. In Germany much time and money are still being devoted to the dirigible balloon, yet the aeroplane has not been abandoned, and the army aviators have accomplished many important flights during 1912.

Large sums of money are being spent in Europe in the interests of military aviation. At the beginning of the year the French Minister of War asked for \$4,000,000 for this purpose; and during the first three months of the year the public subscriptions reached \$280,000. It has been stated that in 1915 France will have in the military service 900 aeroplanes and 1,500 trained pilots. This branch of the military, the aviation branch, is spoken of in France as the "fourth arm." National subscriptions for the development of this service have been started during the year not alone by France, but by Germany, whose subscription had in August reached 5,000,000 marks, and by Italy and Austria.

Military meets or competitions have been held during the year in England, France, Germany, and Russia. In France and Germany these meets took the form of military drills or maneuvers for the military aviators of the country. In England the meet was a competition, some of the events being open to the aviators of the world. The object of the contest was to afford a practical demonstration of the uses of the aeroplane, with the idea of determining which plane or planes are best suited for military purposes. Thirty-two machines entered this contest. The first prize of £4,000, for which any aviator might compete, flying an aeroplane made in any country, was won by S. F. Cody with a Cody biplane (British). The second prize went to A. Deperdussin, who entered a Deperdussin monoplane (French) piloted by Prévost. The first prize of £1,000, for which British subjects flying aeroplanes made (except for the engines) wholly in the United Kingdom, was also won by S. F. Cody. The points considered in this competition were: the speed, the time taken to climb 1,000 ft., the gliding angle, the stop on grass, the stop on a plowed field.

the rise from harrow, the consumption of gasoline and oil, the weight per brake horse-power, the weight per square foot of surface, the time required for taking apart and reassembling, etc.

In August the contest for the Michelin Prize for bomb-dropping closed. The three prizes were won by Lieut. Scott, an American, and were as follows: \$10,000 for placing the greatest number of bombs, each weighing 15½ lb., in a circle 10 m. (32.8 ft.) radius from a height of 200 m. (656 ft.) or more; 12 out of 15 were placed in the circle; \$5,000 for placing the greatest number of bombs in a rectangle 40 by 120 m. (131 x 394 ft.) from a height of 800 m. (2,624 ft.) or more; eight out of 15 were placed in the rectangle; and \$2,000 for the most scientific and practical apparatus.

The Lewis aeroplane gun, invented by Col. J. N. Lewis of the U. S. Army Coast Artillery Corps, has been given a test. The gun is air-cooled, is made of steel and aluminum, and weighs 25 lb. 6 oz. The rate of firing is from 300 to 700 shots a minute. (See also XII, *The Army*.)

Necrology.—The number of accidents during the year was greater than during the year 1911, but the ratio of these accidents to the number of miles flown was less. During the first three months of the year the French military aviators flew a total distance of 650,000 km. (about 403,890 miles), and while the accidents were about the same in number as during the first three months of 1911, the distance covered was double that covered in the corresponding time in 1911. The accidents were due to many causes, but probably more were due to breakage than to any other one cause. This is significant, for the danger of accident resulting from breakage is steadily growing less. Other conditions brought about accidents. Machines were overturned by wind gusts, pilots lost control of their planes, some fell from their machines, some were seized with sudden illness, etc. In France it is said that one accident occurs for every 62,000 miles flown. Monoplanes have been involved in more accidents than biplanes, and they have also won more

aces. This suggests that the desire to win races is largely responsible for cutting down the factor of safety below what is desirable.

During 1912 many prominent aviators, both in America and in Europe, lost their lives. Chief among the best American aeronauts who were killed are the names of Rutherford Page, C. P. Rogers, P. O. Parmalee, F. J. Southard, Wheeler, A. L. Welch, Lieutenant Hazelhurst, Henry Turner, Miss Harriet Quimby, Paul Peck, H. W. Gill, W. B. Chambers, Lieut. L. C. Rockwell, Corp. Frank Scott, Lieut. J. L. Longstaffe, C. F. Walsh, Russel Blair, George Underwood. The total number of deaths from the time man started to fly in heavier-than-air machines to Sept. 1, 1912, is 212.

The year witnessed the death of two men who had done and were doing much to promote the science of

aeronautics, Wilbur Wright and A. Lawrence Rotch. Prof. Rotch, who died on April 7, had for many years, at his own expense, conducted the Blue Hill Meteorological Observatory, and made a life work of studying the air. His investigations of the aerial conditions promised to play an important part in aviation. Wilbur Wright died of typhoid fever on May 30. "Mr. Wright was a man to be admired. He was very modest, always reticent, and a man of sterling qualities. He labored with great devotion to his work and was unperturbed by failures and by public criticism. His success was fairly won and his fame as an inventor is secure." All the world admired his achievements. A French journal says: "It is to these celebrated inventors [Wilbur and Orville Wright] that France owes its present supremacy in aviation."

INDUSTRIAL MANAGEMENT

CHARLES BUXTON GOING

Development in the field of industrial engineering during 1912 has been in the direction of the adjustment of thought and practice to established principles, rather than in the enunciation of new principles or philosophies. An unusual activity seems to prevail in the introduction of better-informed, more rational, more scientific, and more efficient methods of conducting manufacturing operations. Evidences of this are afforded by the pressure of service imposed upon specialists in the field, and by the number of known cases in which special counsel is sought, or advice is asked preparatory to the selection of special counsel. As industrial managers are usually reticent in all matters affecting the internal administration of establishments under their charge, the number of known cases of acceptance of the newer doctrines should doubtless be multiplied by a large factor to obtain the total number of plants in which the leaven is at work.

A New Philosophy.—One important exception should be noted to the general position that the year has been marked by assimilation of doctrine rather than by the

declaration of new ideas. Major Hine's statement of the practice and principles of the "unit system," presented first serially and then assembled in a volume under the title *Modern Organization (The Engineering Magazine)*, affords the first complete view of a philosophy of industrial management which has heretofore been seen only in glimpses. It stands now as a type of the most lately recognized school of industrial thought—the "school of suggestion."

Four Doctrinal Schools.—With the definition of this theory the older systems appear in somewhat different relations from those heretofore realized, and the classification proposed a year ago (*AMERICAN YEAR BOOK*, 1911, p. 728) must be modified. In the newer and broader vision we might identify the four schools of industrial thought thus:

(1) Coercive; the old order under which employer and employee, either individually or in their organizations, match force against force.

(2) Incentive; including the premium systems of Halsey, Rowan, Ross, and others, in which an increased reward, voluntarily offered for voluntary increase of output,

stimulates the workman to such greater productivity as his will determines and his opportunities permit.

(3) Scientific; represented typically by the systems of Taylor and Gantt, and in part by Emerson and Gilbreth, the management now co-operating in standardizing conditions and operations, preparing schedules, providing instruction, and so opening new possibilities for increased output by betterment of conditions that are beyond the workman's own control; the stimulus of increased reward proportioned to the increased output being still retained.

(4) Suggestive; represented typically by Hine's unit system and appearing largely also in Carpenter's committee system, Emerson's efficiency doctrine, and much of Gilbreth's field system. The characteristic is the giving to both officers and employees of new vision of their duties, responsibilities, and relations to the outcome of the work as a whole, by measures which seem rather slight, materially speaking, but which operate on the imagination and the emotions and are akin to mental suggestion rather than to technical instruction or money reward.

Reactionary Tendencies.—A part from Major Hine's work, the views defined in print during 1912 have been, in part at least, reactionary. This is more noticeable, because action, expressed by introduction of more efficient and more scientific management, as already said has been decidedly progressive. Possibly a political setting and purpose has given undue importance to some of the pronouncements of the year.

Those in the latter class most widely noticed are the House of Representatives Report No. 403 on the "Taylor and Other Systems of Shop Management," by Messrs. W. B. Wilson, William C. Redfield, and John Q. Tilson; and Senate Report No. 930, on "Systems of Shop Management," by Mr. Roth, accompanying Bill S. 6,172 by Mr. Poindexter "To Regulate the Method of Directing the Work of Government Employees." The former, though blowing both hot and cold, sums up a sort of Scotch verdict of "not proven" as concerns

the merit of any of the "systems" it inaccurately lists, although with the exception of time-study it approves most of the technical elements of scientific management. The latter report brings a particularly hostile arraignment of Taylor's *Shop Management* to the support of a bill which makes it unlawful for any person having charge of the work of any employee of the United States Government to make a time-study of the operations performed by that employee, or to pay any premium or bonus or cash reward except for suggestions resulting in improvement or economy in the operation of the plant. While no legislation has resulted, these communications show an attempt to crystallize the opposition which has been aroused in certain factions, at least, of organized labor. (See also XVII, *Labor*.)

Books of the Year.—Much more important, because it is representative wholly of the mind of a thoroughly well-informed industrial manager, free from political bias or purpose, is *The Human Factor in Works Management*, by James Hartness (McGraw-Hill Book Co.), announced by its publishers as "reactionary," and intended to lay special emphasis on the proper use of the human being, the correct employment of mind and body, and the utilization of the value of habit, as essential to correct understanding of industrial economics. It is perhaps not so much reactionary as complementary to the doctrines of the scientific-management school. It points out broader psychological concepts and principles than are commonly comprehended in the scientific doctrine of "standardization, systematization, and stimulation." These principles, however, had been already recognized and acknowledged by the apostles of efficiency, even though they had not been included in the doctrine of scientific management.

Psychological factors of management are emphasized again in Prof. Walter Dill Scott's *Increasing Human Efficiency in Business* (Macmillan), such influences as imitation, competition, loyalty, concentration, habit, and relaxation being specifically considered. In *The Factory*, by Jona-

than Thayer Lincoln (Houghton Mifflin & Co.), the sociologic side of the question is put forward, with the purpose of promoting a better understanding between employer and employee. Perhaps the most interesting of all presentations of this side of industrial management, in the books of the year, is William C. Redfield's *The New Industrial Day* (The Century Co.). It is written with full comprehension of the practical employer's point of view, with a broad grasp of economic conditions and laws, and with a deep sense of the worth of the man and the importance of conserving the human element.

Reverting, on the other hand, to systematic argument of the technical phases of the Taylor system, we have Frank B. Gilbreth's *Primer of Scientific Management* (D. Van Nostrand Co.), and Frederick Parkhurst's *Applied Methods of Scientific Management* (John Wiley & Sons), the former devoted to definition of theory, using the catechetical form of question and answer; and the latter to definition of practice, by detailing the actual methods and measures employed in introducing the system into a New Jersey machine shop. Still another line of approach is followed in William Duane Ennis's *Works Management* (McGraw-Hill Book Co.), which follows generally the systematic study of industrial organization in the order of its evolution during the last two decades, and attempts to present comparatively some features of the principal philosophies of management.

Trend of Investigation.—In current periodical literature the most interesting tendency discernible is toward the deduction and establishment of underlying and permanent principles of organization, administration, and management. Some of these studies appear to be taking concrete practical form, and their presentation is likely to be the salient feature of the literature of the subject during the coming year.

Societies.—Institutionally, the record made a year ago should be supplemented by noting the organization of the Society to Promote the Science of Management, which was organized just before the close of the year 1911, and enlists about 100 members devoted to the promotion of the principles laid down by Frederick W. Taylor. Formal organization of the "Efficiency Society" was not completed until March, 1912, when about 1,000 members were enrolled. The Committee appointed by the American Society of Mechanical Engineers on the Economic Administration of Industrial Establishments has been occupied with an extended effort to secure actual data of achievement in increasing the efficiency of industrial management, and a report of their findings on "The Present State of the Art of Industrial Management" was presented at the annual meeting in December. This report, while it shows the influence of the prevailing tendency of thought in defining, at the outset, fundamental principles of management (such as the division of labor and the transference of skill), appears thereafter to proceed on the assumption that there is some single "new element" in the art of management. With a vision apparently limited to papers which have been published in the *Transactions* of the American Society of Mechanical Engineers, and dominated to a large extent by influences springing out of controversies over the Taylor system, it passes, perhaps unconsciously, into an argumentative presentation of the doctrine of so-called "scientific management," rather than into a comprehensive survey of the existing state of the art. It forms, nevertheless, the basis of a discussion from which, eventually, the actual and relative importance of the various philosophies, and the extent to which they have influenced thought and practice in industrial management, may be more correctly and clearly determined.

PHYSICAL PROPERTIES OF METALS AND ALLOYS

JAMES S. MACGREGOR

Cold Working.—The cold working of metals and alloys by hammering, rolling, or drawing has long been known to alter their physical proper-

ties, the principal effects being an increase in the value of the elastic limit and ultimate resistance at the expense of ductility. W. R. Webster (*Trans. Int. Assn. for Testing Materials*, Vol. II, No. 13, 1912) reports a very comprehensive series of experiments conducted upon aluminium bronze, monel metal, silver, copper, and brass. The characteristics of the curves plotted from the results of these experiments are quite similar. All show a progressive increase in ultimate resistance and a progressive decrease in elongation and reduction of area with increasing percentages of reduction by rolling. Although the results given have reference to specimens in which the reduction was effected by rolling only, Mr. Webster states that the preliminary experiments which he has conducted where a given reduction was obtained by hammering and drawing, give practically identical results with those obtained by rolling.

Corrosion.—Electrochemical researches relating to the corrosion of metals and alloys have proved the existence of differences of potential between electrodes of one and the same metal when subjected to variable conditions of stress or when given different heat treatments. W. Spring (*Bulletin de l'Acad. Royal de Belgique*; Classe de Sciences, No. 12.1066) shows that by taking a cold-rolled bar of metal which was in a condition of high internal stress, cutting it in two, annealing one-half to relieve these internal stresses and then forming a cell of the two halves by placing them in an electrolyte, he could obtain an electric current, the annealed half of the bar forming the cathode. Other experiments have proved the same electrochemical principle to be true in reference to several other metals, notably tin and lead. The conclusion is therefore reached that generally any metal in a metastable condition, will in contact with an electrolyte tend to recover in an accelerated degree its stable form.

It is further stated that even simple contact with the stable form will have the same effect. No stressed metal can be assumed to be in a state of complete stability and consequently corrosion and fatigue are

always induced to a more or less degree by the agency above cited.

The Constitution of Cast Iron and the Effects of Superheated Steam.—William Campbell and John Glassford have conducted at Columbia University, investigations to ascertain (1) the nature of corrosion, (2) why some cast irons corrode while others do not, and (3) how corrosion can be minimized. Specimens taken from a superheater showed oxidation following planes of graphite plates. Specimens with successive increments of silicon ranging from white cast iron to cast iron with 5.5 per cent. of that element, as well as malleable iron and medium carbon steel, were placed in superheated steam at 425 deg. C. and 95 lb. pressure for a period of from 30 to 90 days. A similar series were also heated in air to 425 deg. C. and cooled 72 times. The white cast iron and steel showed only surface oxidation. Cast iron low in silicon showed slight penetration of oxidation following graphite plates. The depth of penetration of oxidation increased with increase silicon content and the specimen with 5.5 per cent. silicon was completely altered in the superheated steam treatment. Surface oxidation only was obtained as a result of cooling air.

Other findings in connection with the investigation were as follows: white cast iron, malleable cast iron and steel show surface oxide stain only when subjected to superheated steam. Gray cast iron up to 0.95 per cent. silicon shows the same surface oxidation with slight penetration following graphite plates, the depth of penetration increasing with increasing silicon content.

Effect of High Temperatures on the Physical Properties of Some Alloys.

—A paper by I. M. Bregowsky and S. W. Spring (*Trans. Int. Assn. for Testing Materials*, Vol. II, No. 13, 1912) is of interest because of the wide range of commercial and rolled metals tested, and also because the tests covered the effects of high temperatures upon the strength and elastic qualities under torsional stresses. As these values are among the first of their kind ever published a few of the results are given herewith:

MATERIAL	Temperature degrees F.	TORSIONAL RESISTANCE, INCH-POUNDS	
		At Elastic Limit	At Ultimate Load
Tobin Bronze	75	26,000	63,000
	375	9,000	36,000
	600	4,000	9,000
Parsons Manganese Bronze.....	75	22,500	62,000
	375	14,000	39,000
	600	4,500	9,500
O. H. Machinery Steel	75	25,000	59,000
	375	10,000	50,000
	600	8,000	34,000

Repeated Stress Testing.—J. B. Kommers (*Trans. Int. Assn. for Testing Materials*, Vol. II, No. 13, 1912) has conducted an investigation on the endurance of various metals under repeated stresses covering testing methods and results obtained with the Landgraf Turner machine. He points out, among other things:

(1) the importance of the proper deflection of the specimen under test; (2) the fact that impact as induced by the machine has little effect on results; (3) that an increase in the speed of application of reversal of stress has a slight influence tending to reduce the number of reversals that the specimen will stand; (4) that the condition of the surface of the specimen has a marked influence on results; polished and ground specimens standing a greater number of reversals than specimens of the same material not so prepared. This last observation is an extremely important one.

Strain.—The determination of the true elastic limit of metals is at present a very tedious time-consuming operation. That specimens subjected to tensile stresses absorb heat up to their elastic limit and evolve heat after that limit is passed has been known for some time, but no practical use has been made of this knowledge. T. R. Lawson and J. A. Clapp report a series of experiments now being conducted at the Rensselaer Polytechnic Institute, Troy, N. Y., in which the junction of a thermo-couple is attached to the specimen under test, the terminals being connected to a sensitive galvanometer, thermal changes in the specimen under stress thus being recorded. Some 50 experiments have been made so far. Among the metals and alloys experimented upon are, rivet steel,

medium steel, chrome vanadium steel, gray cast iron, copper, red and yellow brass, and phosphor bronze. The experiments show promise of positive results and will be of great assistance in developing a method for the easy and rapid determination of the true elastic limit of the metals and alloys.

White Metals.—An elaborate series of tests on anti-friction alloys with a view of developing tests for detecting their adaptability for anti-friction purposes is reported by Nino Pecoraro. These tests were conducted at the Metrical Laboratory of the Arsenal at Spezia. They were divided into two groups, the first group containing alloys of copper, tin, antimony, lead, and zinc with small quantities of iron. The temperature of fusion was shown to have a marked influence on the coefficient of friction. The most favorable fusion temperatures being given for the alloys studied. Hammering was shown to be detrimental to most alloys the effect being to increase the friction coefficient. Compression tests were conducted, their function being to ascertain the unit loads the alloys could stand without suffering undue deformation. Abrasion tests for ascertaining the life of the alloy, although costly and consuming much time, were made. Hardness tests which can be easily and rapidly made may be substituted with a fair degree of accuracy for the abrasion tests.

INTERNATIONAL CONGRESS FOR TESTING MATERIALS

BRADLEY STOUGHTON

The International Association for Testing Materials meets every three

years in a congress devoted to the presentation and discussion of technical papers on the science and art of testing materials, on the properties of materials, and on specifications for materials. The last previous congress, the fifth, was held at Copenhagen, Denmark, in 1909. At the close of that Congress the Association chose Charles B. Dudley, of Altoona, Pa., as its president, and appointed the United States as the place for the sixth Congress, to be held in 1912. Upon the lamented death of Dr. Dudley, in 1909, Prof. Henry M. Howe became acting president.

The preparations for the sixth Congress were taken in hand by the American Society for Testing Materials, which is affiliated with the International Association for Testing Materials. That society established an organizing committee, and through this latter a working body, the executive committee, to make the preparations. Under the auspices of the executive committee, also, the American contributions to the technical program of the Congress were brought together, publication, however, being done by the central office in Vienna.

The Congress convened in New York Sept. 2-7, and after its close an offi-

cial tour was made to Washington, Pittsburgh, Niagara Falls, and other cities. The programme contained in all 153 papers on iron, steel, other metals and alloys, cement, stone, paints, road materials, woods, oils, explosives, rubber, glass, stresses, strains, tests, testing methods and machines, specifications, etc. Every paper was in print, and some printed in two or more languages, and in the hands of the members at the time of the meeting; most of them were distributed several weeks ahead of the meeting. An abstract of all papers, printed in English, French and German, was in the hands of all members to facilitate discussion.

To discuss these papers more than 600 scientists assembled from 20 different countries of Europe, Asia, North and South America and Australia. Nineteen foreign governments and 82 foreign institutions, scientific, technical and learned, were represented by official delegates, and 33 United States institutions were similarly represented. The Congress was divided into three sections which held sessions simultaneously, and this procedure made possible devoting a total of 51 hours to discussing the 153 papers.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

DANIEL H. COX

Progress of the Year.—The year 1912 has been one full of interest for Naval Architects and Marine Engineers. The near approach of completion of the Panama Canal has acted as a stimulus for the construction of vessels of all kinds; moreover, the general financial condition of the country has been healthy, and consequently more new enterprises have been undertaken. The lamentable disaster resulting in the loss of the *Titanic* has drawn attention to the necessity of better safeguarding those that travel by water, and has resulted in improvement in the design and equipment of vessels. The success of oil as a fuel for marine and stationary engines has been a stimulus to shipbuilding, by making necessary a larger fleet of oil-carrying vessels to bring this product to the markets.

Measures for Safeguarding Life at Sea.—The loss of the *Titanic* by collision with an iceberg, resulting in the destruction of this magnificent vessel, and an appalling loss of human life, was a shock not only to the public at large, but to the designers and operators of ocean-going vessels throughout the world. Boards of investigation composed of eminent men familiar with the building, operation and navigation of vessels met in the United States and abroad, and reviewed the situation with the utmost care. Although the *Titanic* was considered to be one of the most perfect examples of the skill of the naval architect and shipbuilder, was reputed to be unsinkable, and to have the most modern equipment of life-saving devices, the fact of her sinking within a few hours of the collision, and the small percentage of

passengers and crew saved, although the sea was calm (practically all on board would undoubtedly have been lost had a heavy sea been running at the time of the accident), was an object lesson not to be disregarded. As a material result, innumerable suggestions were made, many being found impracticable, but some easy of application and undoubtedly of value. Among the most important results may be mentioned:

(1) A more careful consideration of the watertight subdivision of vessels, by increasing the number and altering the disposition of the watertight bulkheads, and by increasing the extent and depth of the inner bottom in the larger vessels, carrying this method of protection to a considerable height above the water line.

(2) Much more stringent requirements as to the number of boats and life rafts to be carried, together with more efficient means of transferring them from the vessel to the water promptly and with safety.

(3) A complete revision of the requirements as to the navigation and operation of seagoing vessels, not only bearing upon the standard of efficiency of officers and crew, their familiarity with and knowledge of the operation of the life-saving appliances on the vessels manned by them, but also regulating the courses to be followed at certain seasons so as to avoid the dangerous ice zone, even at the loss of record-breaking transatlantic passage, the craze for which, undoubtedly, more than any other circumstance, was the cause of the loss of the *Titanic*.

(4) Regulations requiring the installation of efficient wireless equipment on all ocean-going passenger vessels and further requiring a sufficient operative force to insure prompt and efficient continuous wireless service, the absolute necessity of this having been forcibly illustrated by the fact that the one wireless operator on the only vessel that was near enough the *Titanic* to reach her in time to be of material assistance was on the point of leaving his post after a long tour of duty, and had the distress signal not been received before he left his instrument

the call for assistance would not have been received at all.

(5) An increased interest in the development and use of all apparatus of every kind calculated to promote safety, such as submarine-bell signalling system, efficient watertight doors, wireless telegraphy, fog signalling, and the increased use of searchlights. All these matters are being given careful consideration in new construction, and many existing vessels have been altered at large expense to meet the new demands, not only in those directions where governmental requirements have directed such reforms, but where the vessel owners have seen that improvements were desirable. (See also I, *The Titanic Disaster*.)

Shipbuilding.—The shipyards throughout the country have for the first time in many years been well supplied with work, and most of the yards have contracts under way that will keep them busy for at least a year to come. Much of the new tonnage has been ordered as a direct result of the desire to take advantage of the interoceanic commerce that will follow the opening of the Panama Canal, but other causes have also contributed to this activity. The general business condition of the country has been good, which has meant more freight to move by water; this has called for more coastwise freight and passenger vessels, and has kept the harbor towing and lighterage companies so busy that they have been forced to add to their floating equipment; many new companies have entered into this field. Also, the natural development of the country at large, consequent upon a period of prosperity has meant an increase in local passenger traffic from the various sea-port and lake centers, and many new passenger vessels have been put in service to take care of this increased travel by water.

Yacht Building.—This industry having been at a low ebb for several years, except in the direction of motor-boat building, now seems to reflect the general commercial activity. A number of large steam yachts have been built, and the yacht building yards are now busy with the

construction of many vessels of this class, most of which are to be equipped to burn oil as fuel. The construction of motor propelled yachts continues to show activity, although there is a gratifying inclination to avoid the use of gasoline engines of extremely large horsepower, a matter that was somewhat overdone in 1911. The construction of sailing yachts of all classes is unusually active, showing a great renewal in the interest taken in this sport.

Marine Engineering.—The use of fuel oil for firing marine boilers has largely increased during the past twelve months. The Navy Department, after exhaustive tests, has definitely committed itself to this system of firing for new battleships and destroyers. The most approved method of burning fuel oil has been determined to be that of mechanical atomization, the oil being pumped through burners so devised that it is delivered with a whirling motion in a cone of fine mist, the air supply being introduced around the burners and the amount delivered to each burner being capable of regulation. With the use of fuel oil a greater steaming radius is secured than with coal, more steam can be generated from a given boiler capacity, the boiler room force can be largely reduced, and the full boiler power can be maintained indefinitely. The question of the supply of fuel oil, however, is a subject on which it is difficult to get reliable information, and if it were not for uncertainty on this point, and on the probable future price per gallon, it would seem that no intelligent vessel owner could afford to consider the use of coal.

The design and method of construction of the various types of turbines have received careful attention, which has resulted in marked increase in economy and ease of repair. Tur-

bine reduction gearing is under trial in this country with results said to be encouraging. Electric propulsion on a large scale has been given careful investigation, the electricity being produced by steam-driven turbo-generators, and passed through motors directly attached to the shafts. Greater economy, saving in weight and centralizing of control of prime movers are the advantages claimed, and as a vessel of large dimensions with this method of propulsion is now being built for the Navy, the matter will soon be put to a practical test. (See also XII, *The Navy*.)

Possibly more interest, the world over, is taken in the progress of design and manufacture of internal-combustion engines using heavy oil as fuel, than in any other matter relating to marine engineering. The manufacture of the most widely known engines of this class, the Diesel engines of various types, has received for a number of years careful attention on the Continent, has recently been actively taken up in Great Britain, and finally in the United States, where, owing to the more favorable situation as regards coal supply, the necessity for a change in fuel was not so imperative. Although many foreign-built vessels of large size and high powers engined with Diesel motors have been in active use, some of them in regular trans-Atlantic service for some time, in this country, outside of the more recent submarines and a few commercial installations of small horse power, nothing of note has as yet been accomplished. The recent order placed by the Navy Department for a submarine tender, to be driven by a Diesel engine of 1,000 h. p., is a proof of its interest and confidence in this new development. The performance of this vessel will be noted with great interest. (See also *Mechanical Engineering, supra*.)

ENGINEERING EDUCATION

HENRY H. NORRIS

Purpose.—There seems to be a general opinion among educators connected with technical schools that the purpose of these schools is not primarily to fit students for immediate

usefulness in the industries, but rather to give them such training in the fundamentals of literature, science and the useful arts that they shall become thorough, self-reliant, original

and progressive. The division between technical and vocational schools is becoming more distinctly marked year by year. This division of the field permits the technical schools to devote themselves more directly to accomplishing their real purpose than they were able to do formerly.

Courses of Instruction.—The number of courses offered in technical schools is great and increasing. All are founded on a more or less uniform basis of science, mathematics, mechanics and drawing, specialization coming in general only in the last year or two of the courses. The standard length of an engineering course is four years, but in a few cases it is three, and in an increasing number, five. The tendency to lengthen the course, and this is now quite marked, is due to a demand for more room for the so-called cultural subjects, such as economics, language (especially English) and history. Complaints from employers of technical graduates indicate a lack of general education on the part of these graduates, evidenced particularly by inability to express thoughts clearly and coherently. This lack is recognized by the technical schools, and, while passing on much of the blame to lower-grade schools, they are endeavoring to meet the objections by removing the cause. This requires more time than the four-year course affords. The state-supported colleges are spending increasing amounts of money on technical education. There is a resulting tendency of students to get their education in their home schools rather than to flock to the older special schools. As a result the pressure on the latter has been somewhat relieved and there is more opportunity to consider their educational problems more carefully. Apparently for the first time there appear to be accommodations for students in technical courses equal to the demand.

Entrance Requirements.—While there is as yet no generally-accepted entrance standard, there are two general tendencies evident; first, to in-

crease the requirements to the Carnegie Foundation standard, and, second, to specify only fundamental requirements, encouraging students to broaden their general culture in the secondary schools. The recommendations of the Society for the Promotion of Engineering Education standing committee on entrance requirements include the following, of which at least 14 units should be required: Mathematics, elementary and advanced algebra, plane and solid geometry, plane trigonometry; science, chemistry, physics, botany, zoölogy, physical geography; language, English, French, German, Spanish, Latin; history, ancient, modern European, English, American. The schools are coming to these standards as rapidly as possible, as many units as 15 being required in some cases. During the year the School of Mines in Columbia University was made strictly a graduate school.

Future Problems.—As already suggested, the main problem is to increase the cultural content of the courses without unnecessarily increasing the expense to the student, already heavily burdened. It may be possible so to improve the efficiency of instruction that the courses need not be lengthened. Leading educators are studying the principles of scientific management with a view to applying them to college administration. With the present methods, technical graduates must spend a year or two after graduation in acquiring experience before they are ready for responsible work. Some critics claim that this probationary period should be unnecessary and is a reflection on educational practice. While not accepting the conclusion as generally correct, educators are giving this criticism careful consideration. Another problem is in connection with the engineering degrees. At present the number of degrees granted is legion and their character diversified. At least 80 engineering degrees are granted. This condition is ludicrous and must be changed in the near future.

XXIV. MATHEMATICS AND ASTRONOMY

MATHEMATICS

E. B. WILSON

Henri Poincaré.—If, at the beginning of the year 1912, the question had been asked, "Who is the greatest living mathematician?", the reply would have been unanimous and unhesitating: Henri Poincaré. At present the question can no longer be answered; opinion would be too evenly divided among a number of peers. Poincaré is dead; no mathematician now towers above all his confrères. We have to go back many a decade and we may have to go forward many another before we find anybody so clearly outclassing all his contemporaries. It is therefore the death of Poincaré on July 17 which marks the most notable and the most lamentable event of the year in the world of pure mathematics, of mathematical physics, and of mathematical astronomy. As a great mathematician's work is more or less ahead of his time, as it can best be judged only after it has been left for others to carry on, and as it really attains its fullest life only when it has thus become the thought and inspiration of many followers, we may in this exceptional year best represent the thought of mathematicians by lingering over the life and work of Poincaré.

Poincaré was born at Nancy, France, April 29, 1854. He entered the Ecole Polytechnique, Paris, in 1873, and the Ecole des Mines, Paris, in 1875. He took his rank as "Ingénieur ordinaire des Mines" in 1879, and in the same year also obtained his doctorate in mathematics from the University of Paris. After only a few months' duty as engineer in the public service, he was placed at the disposition of the Minister of

Public Instruction and entered university teaching, first at Caen and then in 1881 at Paris, where he remained till his death. As his genius worked itself out, he was the constant recipient of distinctions at home and from abroad—prizes, medals, government appointments, honorary doctorates and honorary membership in learned societies. In 1908 he was elected one of the forty immortals of the Académie Française, probably the highest honor that can come to a French mathematician.

It is difficult to say whether the most remarkable thing about Poincaré's work is its profundity or its wide range. For he contributed vital researches to pure mathematics in analysis (function theory and differential equations), in algebra, and in geometry, extending our knowledge to new domains and elaborating it in older fields. His investigations in mechanics, especially in celestial mechanics, are of the highest order, and it was for these that he received the gold medal of the Royal Astronomical Society, London, in 1900. On mathematical physics he published a long series of treatises, for the most part reports of his lectures at the Sorbonne, and a large number of original articles. His genius and versatility, like Helmholtz's, was in no way better shown than by the freshness and vigor with which he attacked the newest problems and expounded the latest views—the theory of wireless telegraphy, the principle of relativity, the hypothesis of energy-quanta, all of them topics of the last six or eight years only. Finally in philosophy, especially the philosophy of science, his work was

broad, mature, and incisive; he may indeed be ranked with William James as a founder of pragmatism, and his books, *Science and Hypothesis*, *Value of Science*, *Science and Method*, in the original and in various translations, have brought his mighty intellect to the service and instruction of a numerous non-mathematical public.

The late Sir George Darwin, president of the International Congress of Mathematicians, in his address at the opening meeting, expressed very well the general view when, after referring to the diversity of mathematical research and the incompetency of any living man to understand all its various branches, he paid this tribute to Poincaré:

Up to a few weeks ago there was one man who alone of all mathematicians might have occupied the place which I hold without misgivings as to his fitness; I mean Henri Poincaré. . . . It brings vividly home to me how great a man he was when I reflect that to one incompetent to appreciate fully one-half of his work yet he appears as a star of the first magnitude.

The International Congress of Mathematicians.—The second most noteworthy mathematical event of the year was the fifth of the quadrennial congresses of mathematicians, meeting this time at Cambridge, England, Aug. 22-7. The last meeting was at Rome, the next will be at Stockholm. There were present about 500 mathematicians, representing 27 different countries. Naturally, the greatest attendance was from the British Isles (about one-half), but after the United Kingdom the United States was probably represented as well as any other country. The Congress was organized into four sections: I, arithmetic, algebra, analysis; II, geometry; III, (a) mechanics, mathematical physics, astronomy, and (b) economics, insurance, statistics; IV, (a) philosophy, history of mathematics, and (b) mathematical instruction. To these various sections over 100 papers were read by various mathematicians, representing their most recent investigations. In addition to the sectional meetings, there were

general convocations addressed by eminent mathematicians, selected well in advance by the committee of organization of the Congress, and charged with the presentation of some particular topic upon which they were especially fit to speak. From our own country Prof. E. W. Brown (Yale) gave a lecture on "Periodicity in the Solar System," and Prof. M. Bôcher (Harvard) one on "Boundary Problems in One Dimension."

One value of these congresses is to get mathematicians together for mutual influence and interchange of views. The participants must feel, however, that the elaborate sectional programmes are somewhat of a hindrance to this intercourse; for the tendency to increase the number of assigned lectures is apparent, and should be encouraged. Another use of the congresses is to organize committees to investigate questions of international interest. The committee on mathematical instruction appointed at Rome in 1908 (see *AMERICAN YEAR BOOK*, 1910, p. 556) presented a collection of 280 reports, making some 9,000 octavo pages, and at its own request was continued in office to complete the work and report in 1916. The directors of the work were increased from three to four by the addition of Prof. D. E. Smith (Teachers' College, Columbia). The committee on vectorial notations had apparently never set to work, and could make no report.

It was a peculiar and valuable experience to have the Congress meet at Cambridge, England; for mathematics at Cambridge differs from mathematics elsewhere. From Newton's time down to Maxwell's and on to the present day, Cambridge, though graced with a number of eminent pure mathematicians, has always stood preëminent in the scientific world and in the popular mind for mechanics and mathematical physics. The president of this Congress, Sir George Darwin (who has died since these lines were written), and the honorary president, Lord Rayleigh, are in the forefront of mathematics in the Cambridge sense at the present time. Their influence and opinions, and those of their emi-

nent colleagues, Sir J. J. Thomson and Sir Joseph Larmor, M. P., must have been somewhat strange to the foreign mathematicians who gathered at Cambridge and who for the most part represented mathematics in the Continental and American sense of pure mathematics. A desideratum is the closing up or bridging over of the chasm between the pure and the applied mathematician. The International Congress at Cambridge exerted a beneficial influence towards the consummation of this end.

In this connection the admirable address of Prof. C. Runge (Göttingen) on the "Mathematical Training of the Physicist in the University"

should be mentioned. He showed clearly that mathematicians do not construct their courses with sufficient attention to the needs of the future physicist and engineer, and that a reconstruction in their favor would not harm, but rather benefit, the young pure mathematician. An interesting feature of the Congress was the presence of Father Hagen, the Pope's astronomer, who read a paper on the rotation of the earth; for, as evidence that the Papal observatory is now bending its energies to the study of proofs of the earth's rotation, this cannot but call to mind the indomitable Galileo's *E pur si muove!*

ASTRONOMY

DAVID TODD

Necrology.—Poincaré and Andre in France, Franklin-Adams, Cottam, Darwin and Lynn in England, Becker in Germany, and Boss, Von Vleck, Davidson and Lawrence Rotch in America comprise the loss by death sustained during the year.

Honors and Prizes.—The degree of Doctor of Science was conferred upon Backlund at Oxford and Frost at Cambridge. Schwarzschild was elected to the Berlin Academy, and Kolbold associate of the Royal Astronomical Society. Pickering was elected president of the American Association for the Advancement of Science, Dyson president of the Royal Astronomical Society, and Hough president of the Royal Society of South Africa. The British Science Guild made a presentation of silver plate to Sir Norman and Lady Lockyer. The Copley medal of the Royal Society was awarded to Sir George Darwin for his researches in astronomical evolution, and the gold medal of the Royal Astronomical Society to Hinks for his determination of the solar parallax from observations of Eros. The prizes of the Paris Academy were awarded as follows: Lalande to L. Boss, Valz to Rambaud, Pontécoulant to Schulhof, and the Damoiseau prize divided among Millosevich, Witt, and Lagarde.

Appointments.—H. T. Plummer has been appointed Astronomer Royal for

Ireland; Mascart, director at Lyons; and Bergstrand, director at Upsala; Nevill retires from Natal; and Gale succeeds Frost as editor of the *Astrophysical Journal*.

Addresses.—The addresses of the year have been both numerous and important. Sir George Darwin lectured before the Royal Institution of Great Britain on the "Life and Work of Sir William Herschel"; Brown before the International Congress of Mathematicians at Cambridge on "Researches on Periodicity in the Solar System"; S. P. Thompson on the "Status of Optical Science" before the Optical Convention; Wood on the "Study of Nature by Invisible Light," with special reference to astronomy and physics; Michelson on "Recent Progress in Spectroscopic Methods"; while Turner gave the Halley Lecture on "The Stars in their Courses."

Instruments.—Wood by chemically depositing nickel on glass has originated a type of reflector which approaches the metallic speculum in its capacity for reflecting ultra-violet light. Konkoly describes the excellent instrumental equipment of the O-Gyalla Observatory. See considers a twelve-foot reflector among present possibilities, and shows how it could be used to good advantage in research on the Milky Way, whose depth he considers such that millions of years are required for light to span its im-

ments. Hirayama has continued his experiments with the photographic transit, giving very accurate results. A new Hartmann spectro-comparator has been presented to the Cape Observatory by Sir David Gill. The Optical Convention appointed an able committee to inquire into problems touching the improvement of optical instruments, especially those of the astronomer.

Observatories.—The Astronomical and Astrophysical Society of America met at Allegheny and Prof. E. C. Pickering was re-elected president. The new Allegheny Observatory, of which Dr. Frank Schlesinger is director, was dedicated Aug. 28, its principal instruments being a 30-in. reflector, memorial to Keeler, a former director, and a 30-in. refractor, memorial to William Thaw, the foremost patron of the Observatory. The address on this occasion was by Brashear. Perrine, director of the Argentine National Observatory, is to have a 60-in. reflector, located in the mountains to the west of Cordova. The observatory at Hem (Nord) under the directorship of Jonckheere becomes affiliated with the University of Lille. The work of a large number of observatories is summarized in the *Vierteljahrsschrift* of the *Astronomische Gesellschaft*, and translated in the monthly issues of the *Observatory*. At Greenwich a noteworthy advance has been made in abridging the annual publication by the omission of unnecessary details of observation. The Astronomical Society of Barcelona held a very successful exhibition of objects and instruments pertaining to lunar research. The Carnegie Institution appropriated about \$31,000 for the work of precision in charge of L. Boss, and \$136,000 for the Mt. Wilson Solar Observatory, which now has four highly effective telescopes fully equipped and in use. A new observatory is proposed for Grouse Mountain, B. C.

The Sun.—Having passed the epoch of minimum spot activity the sun has now entered upon a renewal. The Cape of Good Hope Observatory has helped out with photographs of the sun on 293 days, to complete the daily record of the entire year. Slocum spectroheliographed a very in-

teresting solar prominence, showing clearly its rapid dissolution. Evershed and Riccò continue their records of solar prominences visually. Very interesting investigations are in progress relating to solar influence on the weather, the details of which are not yet fully worked out, although sympathetic periods of oscillation of four, 11, and 35 years are now recognized as existent between the sun and the earth. Dorno's painstaking observations of solar radiation from the summit of Davos have been published in full. Nicholson suggests a theory of the coronal spectrum in accord with recent theories of the emission of energy.

Eclipses.—Discussion of the ancient Babylonian eclipses is renewed by Nevill, who assigns to one recorded on a British museum tablet the remote date of June 5, 1217 B. C. Todd investigates the tracks of all total eclipses visible in Brazil for two and a half centuries (1912-2162). Wittram has discussed the stellar occultations during the total lunar eclipse of Nov. 16, 1910. The eclipse of the sun on April 17 turned out to be a very important event, both because of the nearly ideal weather conditions and of the location of its central track through Madeira, Portugal, Spain, France, Belgium, and Germany. It proved actually total in northern Spain for a second or less, though in France and beyond totality was gradually merged into annularity. The corona was that of the minimum sun-spot type, and was seen to extend in an ecliptic band for 2.5 solar diameters. Mercury and Venus were visible, but no stars. Many observations were made for the better ascertaining of the moon's diameter and position. The observatories of Belgium, France, and Spain issued excellent memoirs on the conditions precedent to the eclipse. Hundreds of photographs have given definite data as to the mountain irregularities on the edge or limb of the moon. The event was particularly improved in the opportunity afforded for spectrum photographs, showing the composition of the layers of the solar atmosphere; and it has become evident that spectroscopic work need not wait for totality, but can be very

effectively prosecuted during annular eclipses and partial eclipses of large phase. Many successful kinetograph films were for the first time secured, having an important bearing on the study of Baily's beads; also a dirigible balloon was first employed in eclipse observation, from which the lunar shadow was seen as a darkish spot about two miles in diameter swiftly traversing the landscape. The long electric waves used in wireless telegraphy were found to travel better during the darkness of the eclipse than in the day time. In spite of unfavorable weather chances, English, French, Argentine, and Chilian expeditions took the field for the total eclipse visible near Rio de Janeiro, Oct. 10. They were provided with abundant equipment for studying the corona and its spectrum. The Brazilian Government appropriated \$23,000 for the reception and entertainment of the visiting expeditions. Rain frustrated their efforts in Brazil, but the eclipse was observed in Quito.

The Earth.—Wegener finds an atmosphere of perceptible density at heights exceeding 300 miles, in which an unknown gas exists similar to coronium in the sun, and which he terms "geocoronium." Humphreys finds a possible explanation for the earthlight, or brightness of the mid-night sky exclusive of star light, in bombardment of the outer atmosphere by fine meteoric material. Arrhenius states his views as to the evolution of planetary atmospheres, and, applying his theory to the case of the earth, accounts for oscillations of temperature and climate. For Venus he would reject a long-period rotation, and for Mars he finds a temperature of 30 deg. below zero. Albrecht presents the international results for variation of latitude, the curve of departure from mean position now coiling up again since 1911. Jamaica has adopted eastern standard time; and the question of calendar reform continues to be much discussed, Russian interests and the Greek church appearing as the chief obstacles to the adoption of a world calendar.

The Moon.—Hinks derives a new value for the moon's mass, 181.53 of

the earth's; and Wood, by combining photographs taken by light from three or more regions of the moon's spectrum, shows how a science of lunar petrography may become possible.

The Planets.—Sir George Darwin, in dealing with periodic orbits, exhibited many points of interest in the evolution of the solar system; as, for instance, how a large planet can absorb its small neighbors and so clear a space in which to move about the sun. Struve finds the inclination of Mars' equator to its orbit 25.2 deg., and the planet's compression 1/190. The surface of the planet was critically studied by Jarry-Desloges and the staff of the Lowell Observatory. All the numerous detailed changes were reported. Variations in the brightness of Libya were quite marked and many canals were broad, diffuse, and pale. Several observers who saw canals failed to note their gemination. The south polar cap entirely vanished, but subsequently reappeared. Mora calculates the circumstances of the oppositions of Mars for the twentieth century. About twenty asteroids were discovered anew, some of which proved to be identical with bodies previously found. Metcalf discusses the asteroid problem in general. Leuschner has found the lost planet MT, a feat of mathematics comparable with the rediscovery of Ceres by Gauss a century ago. The period of MT proves to be in excess of four years, placing it almost as far out as Jupiter, with its aphelion more remote from the sun than Jupiter ever goes. It is a tiny body, not more than four or five miles in diameter, and the great eccentricity of its orbit brings it at intervals of about 13 years nearer the earth than any other member of the solar system, save the moon. The red spot on Jupiter has continued to drift rapidly westward in longitude, about 22,000 miles per year. According to Denning it has exhibited curious eccentricities of motion, the longitude drift having lately ceased temporarily. Jarry-Desloges has observed many changes in the southern hemisphere of Saturn, and Tikhoff secured some remarkable photographs of this planet through color screens. Slipher from spectrograms

of Uranus finds the rotation period of the planet 10 hr. 50 min., and Bergstrand deduces a new value for the planet's figure and mass. Stratton investigates possible phase relations between the planets and sun-spot phenomena, and Brown develops the mathematical theory of libration in planetary and satellite systems.

Comets.—Borrelly, classifying the discoveries of comets according to place, finds that of 376 discovered since the sixteenth century, 64 were found at Marseilles, 46 at Paris, Geneva, N. Y., taking third place with 26. The Tokio Observatory has published a memoir on Halley's Comet with 131 photographs (see also Crommelin in *Mem. British Astronomical Association*, XIX). Hoffmeister connects this comet with the May Aquarids. Schwarzschild and Kron have investigated the distribution of brightness in the tail of this object. The great comet of the year was discovered by Brooks. It exhibited little of interest till near perihelion, when suddenly it showed a spectacular wealth of structure in the tail which was caught on a remarkable series of plates by Barnard. A very beautiful and conspicuous object, there was a striking reduction in the size of the comet's head on approaching perihelion, probably due to increased pressure of the sun's light. Wright and others secured abundant photographic record of its spectrum. On one occasion examining it with the 40-in. telescope, Barnard says:

The comet was several times larger than the field of view, with a small, strong condensation, but no definite nucleus. This view was a very impressive one. I do not know any telescopic view of a comet that has produced such an impression of immensity. It seemed as if one were (as he really was) looking deep down into an enormous sphere of transparent vapor through which the distant stars were shining and in the center of which glowed a brighter condensation that illuminated it.

The comet's spectrum was photographed by Pluvinel, Baldet, Iñiguez, and many others. Gale's comet (1912 α) had a normal spectrum and a short secondary tail at a large angle with the primary. Comet 1912 β

(Schaumasse-Brooks) appears to be identical with that of Luttle (1858) and Mechain (1790 ii).

Brooks received the comet medal of the Astronomical Society of the Pacific, and Schaumasse the 74th award of the Donohoe comet medal. W. H. Pickering has published a very extended statistical investigation of cometary orbits.

Meteors.—Broch finds the mean height of Perseids 115 km., and the mean length of their path 72 km. Denning calls attention to the apparent extinction of this swarm in recent years. Farrington has classified 125 stone meteorites from chemical analysis. E. Thomson has investigated the Diablo crater and adds the weight of his evidence that it was produced by a meteoric fall. Henry gives the epoch and order of meteoric showers throughout the year. Denning calculates the real paths of fireballs and shooting stars for a period of 15 years.

The Stars.—Davidson has ascertained the magnitudes of 150 stars adjacent to the North Pole, and Pickering from examination of a large number of photographic plates, especially with the 60-in. reflector on Mt. Wilson, is able to give a table of Harvard polar sequences down to the 21st magnitude. Backhouse has published a very useful catalogue of nearly 10,000 stars, with especial prominence given to stellar magnitudes, primarily designed for meteor observers. The sixth series of accurate photographic star-charts by Palisa and Wolf has been issued. Oxford Observatory has its own work on the astrographic chart so far advanced that Turner has now come to the rescue of the Vatican Observatory, whose allotment was far behind: there must be more of this generous assistance if this great work, now a quarter-century old, is to be completed within a reasonable time. Van Maanen finds the proper motions of 1,400 stars in the double cluster in Perseus unaccountably small. Kostinsky, from a comparison of plates of star clusters with the Pulkowa astrograph, finds many faint stars with large proper motions; also he finds the parallax and proper motion of Mira exceedingly

small. Flint has determined the parallaxes of 124 stars, chiefly between magnitudes 1.5 and 2.5, among which are Alpha and Beta Persei, Beta Canis Majoris, Gamma Leonis, and Castor, with probable errors indicating a high degree of accuracy of the work. Pokrowsky develops a new method of finding the angular diameters of stars by means of elliptically polarized light. B. Boss discusses the suggestion that community of direction and velocity in star-streams may be caused by the initiation and maintenance of their motions in an electro-magnetic field of universal extent; the nebulae being the seat of tremendous ionization forces producing segregation, with electro-magnetic polarities in the segregated masses. Charlier in his *Studies in Stellar Statistics* deals especially with the constitution of the Milky Way, the number of stars in equal areas and their distances, as a unit for measuring which he suggests the term *siriometer*, which is equal to a million times the sun's distance from the earth. Burnham, Doberck, Aitken, Jonckheere and Voûte continue their observations of doubles. Barnard observed the companions of Sirius and Procyon with the 40-in. Hertzprung calculates the parallaxes of certain double stars. Doberck, collating the masses of pairs of double stars, finds the average mass of a single star about equal to that of the solar system; but the data are as yet too meagre to correlate average mass and spectral type. The southern Milky Way was photographed by Bailey from an elevation of 4,500 ft. on the Great Karroo, South Africa. Turner gave a tentative explanation of the two star streams in terms of gravitation, dealing especially with the position of the center of our system. Dugan has investigated the light curve of the system Z Draconis. Hertzprung investigates the galactic distribution of certain types of stars.

New Stars.—Barnard discusses recent observations of Nova Cygni (1876). Slocum finds a very small parallax for Nova Lacertae, such that the recent outbreak must have occurred at the star about 180 years ago. On March 12 Enebo discovered a new orange-yellow or reddish star

of the fifth magnitude near Theta Geminorum, whose spectrum showed hydrogen lines both bright and dark similar to the spectrum of Nova Aurigae and Nova Persei in their earlier stages. Probably discovered before reaching its greatest brightness, a photographic plate of the region in question by Kopff in 1909 shows a fifteenth-magnitude star which is probably identical with the Nova. At one period the Nova diminished in brightness very rapidly, losing fully a magnitude and a half in 24 hours. Many of the hydrogen lines in its spectrum were double or treble, and all displaced toward the red. Wolf found apparently periodical changes in the structure of the complicated hydrogen bands which may be related to the seven-day magnitude variation remarked by Kritzing. Hamy and Millochau find spectroscopic evidence of exceedingly high temperatures in the Nova. Deslandres develops a theory of new stars by comparing their spectra with that of the sun. Newall and Stratton secured especially fine spectrograms, as also at the Pulkowa, Lick, and Yerkes Observatories. Küstner found dark lines in the spectrum of the Nova which he attributed to radiation from uranium and radium. Lockyer connects many of the lines not due to hydrogen with the principal enhanced lines of iron. Among the fine spectrograms of this remarkable star were many by Ifigüez, showing considerable variation in the number, intensity and definition of the numerous bright and dark lines.

Radial Velocities.—Results continue to pour in from the Lick Observatory and the Santiago station, under the able direction of Campbell and the patronage of Ogden Mills. Wilson and Plummer have attempted systematic determinations of these motions as a class in part related to the Milky Way. Radial velocity work of the Cape Observatory appears to show a distinct variation of wave length with spectral type, and contributes much to the general trustworthiness of work of this character, abundantly prosecuted at other observatories. Campbell finds the intrinsic velocities of stars, functions of their spectral classes: young stars

are traveling slowly, about 12 km. per sec., old stars about 34 km. Our own sun is a middle-aged star with a motion of $19\frac{1}{2}$ km. The reason why stars increase their speed with age is not yet known. Kapteyn finds that this phenomenon of the stellar universe entails a dissipation of star groups as they grow older. Russell notes a very marked relation between the actual brightness and class of spectrum of many stars whose distances are well known: his arrangement of the several groups of these stars in the order of increasing density, beginning with bright red stars like Antares, may be regarded as representing the evolutionary history of a star: at first it becomes more and more heated by contraction upon itself, and finally, when it gets too dense to admit further shrinkage, it quickly cools off as a solid body would. Discussing the evolution of double and multiple systems in the light of recent discoveries, especially the spiral nebulae, See suggests the likelihood of residual nebulosities around such stars as Alpha Tauri and Beta Cygni, possibly detectible by photography.

Variable Stars.—Cannon has published a translation of Argelander's enthusiastic appeal in 1844 to the "friends of astronomy" to devote their observing energies to this class of work. Then there were but 18 variables; now there are 4,000 such objects with a world-wide distribution of observers. Russell has developed the general method of determining the elements of eclipsing variable stars, with application to several objects of the Algol type. Leavitt discusses the light variation of 25 stars in the Small Magellanic cloud, confirming the relation of the brightness of these variables and the length of their periods. Markwick publishes five years of visual observations of variables by the British Astronomical Association, and Fleming 20 years of photographic observation of those objects.

Stellar Spectra.—Cannon has examined the spectra of many hundred double stars. Adams, with the three-prism spectrograph attached to the 60-in. Mt. Wilson reflector, investigates many of the spectroscopic bina-

ries, some of which have variable velocities in the line of sight; also a few stars with very great radial velocities. Baxandall, in his researches on the chemical origin of various lines in solar and stellar spectra, gives the results of a comparative study of sun-spot spectra, in relation to that of the sun itself and its chromosphere with that of certain stars, with a discussion of the occurrence of nitrogen lines in stellar spectra. Also he gives the wave-lengths of certain well-defined lines of simple and definite origin which are especially adapted to radial-velocity work; and in addition the wave-lengths of those well-marked lines occurring in celestial spectra no terrestrial equivalents for which have yet been found. Hagström investigates the distribution of stars of different types, and by accepting Herschel's theory that the visible stars form a single system lenticular in form; the cooler and redder stars are located in the neighborhood of the sun and the hotter stars near the edge of the lens-shaped region, with the sun itself in the northern part of the stellar system and the hotter stars in the southern hemisphere. Fowler, in summarizing the evidence of chemical unity existent among all the bodies of the visible universe, recalls that both Kant and Laplace suggested such a unity, but that it was reserved for Bunsen and Kirchhoff to pave the way for actual test of the idea and its subsequent proof, which may now be regarded as absolute, since all celestial spectra are capable of laboratory reproduction.

Spectroscopic Binaries.—Harper makes Gamma Geminorum a spectroscopic binary of exceptionally long period (nearly six years). Ludendorff, by taking from Campbell's second catalogue those stars which have an absolute radial velocity of 8 km., shows a distinct differentiation of their velocities when arranged according to Lockyer's classification of the helium stars, in harmony with which the classes of stars fall into an evolutionary order, with differences in their chemical constitution accompanying differences in age and temperature as a criterion. Also he has revealed a great difference in the

masses of these objects by discussing them according to their spectral class. Daniel and Schlesinger deduce for Beta Scorpii an orbit of great eccentricity and comparatively large masses of the components.

Nebulae.—Sutherland investigates the spiral structure in nebulae in connection with the hypothesis that the solar system in its evolution passed through the stage of such a nebula, which perhaps affords a foundation for the law of Bode or Titius. Bailey from Harvard photographs has found many hundred new nebulae. Assuming that the spiral nebulae are external galactic systems, Max Wolf estimates the distance of well-known objects of this class at from 33,000 to 578,000 light-years. Investigating the spectrum of the ring nebula in Lyra, he concludes that the radiations from different regions of this object indicate substances with widely differing atomic weights. Very deduces for the nebula of Andromeda a distance of 1,600 light-years, while some of the smallest and faintest ob-

jects of this class may be at a distance of a million light-years. Nicholson investigates the spectrum of nebulae and its relation to the constitution of the ring nebula in Lyra. Wirtz has embodied his observations of nebulae in a general catalogue.

Bibliography.—Among the books of the year are: *The Measurement of Time*, by the Astronomer Royal; Maunder, *Sir W. Huggins and Spectroscopic Astronomy*; McKready, *A Beginner's Star-book*; Serviss, *Astronomy in a Nutshell*; *Observers' Hand Book of the Royal Society of Canada*; Andoyer, *Astronomie Théorique*; Henrionnet, *Petit Traité d'Astronomie Pratique*; De Ball, *Lehrbuch der sphärischen Astronomie*; Krieger, *Mond-Atlas*, elaborated in a new and complete edition by König; Rause, *Der Sonne*; Oppenheim, *Probleme der Modernen Astronomie*; Hagen, *Pubblicazioni della Specola Vaticana*, VI, VII; Cohn, *Astronomischer Jahresbericht für 1910*; Schiaparelli, *Pubbl. del Reale Osservatorio di Brera*, XLVI.

XXV. GEOLOGY, METEOROLOGY, AND GEOGRAPHY

GEOLOGY

DYNAMIC AND STRUCTURAL GEOLOGY

J. B. WOODWORTH

Owing to the exigencies of publication the annual record of progress in geology presents to the reviewer a miscellaneous assortment of achievements without any coherent plan. If, however, the several contributions are considered in the light of the plans of the scientific bureaus from which they emanate, they will usually be found to constitute a consistent series of investigations carried out logically with regard to some natural province of the continent or to the successive steps in the solution of a geological problem.

No book of paramount interest to the student of American geology has appeared during the year. The increasing exactness of geological description and representation of the phenomena of the earth's crust, accompanied by a high specialization of the geologist in the physical, chemical, or organic side of the science, is shown by a large number of papers and monographs published annually by geological surveys and scientific societies. The appreciation of this technical knowledge by engineers and miners is reflected in the numerous contributions in which geological details are set forth for the guidance of industrial workers. Some of the noteworthy contributions to dynamic and structural geology which have appeared during the year may be briefly mentioned.

Dynamic Geology: Isostasy.—In the matter of the physics of the interior of the globe, the doctrine of isostasy was referred to in the *YEAR BOOK* for 1911 (p. 581) in connection with Hayford's treatise on the sub-

ject. Lewis Harmon (*Jour. of Geology*, Vol. XIX, 1911) attempts to throw doubt upon the validity of Hayford's conclusion that isostatic compensation exists in the earth's crust, by pointing out that the argument assumes such compensation, which is but one of three possibilities, under-compensation, compensation, and over-compensation. William Bowie unintentionally meets this comment in a report on the "Effect of Topography and Isostatic Compensation upon the Intensity of Gravity" (Special Publication No. 12, U. S. Coast and Geodetic Survey, 1912), supplementing the investigations of Hayford. Bowie concludes that "the portion of the earth's crust covered by the United States proper is, on an average, in practically a state of complete isostasy. There are local deviations from that perfect state which amount, on an average, to about 25 per cent."

The Flow of Rocks.—Closely related to isostasy is the question of the depth of the zone of flow in the earth's crust, to which Frank D. Adams makes a noteworthy contribution from the experimental side (*Jour. of Geology*, Vol. XX, 1912). His experiments show that under the conditions of temperature which exist at a depth of 11 miles below the surface, small open cavities will not close even if the factor of time is allowed for by increasing the pressure over and above that which occurs at that depth by nearly 50 per cent. The author points out that previous calculations of the depth of flow based on the crushing strength of rocks at the surface are erroneous; that at ordinary temperatures, but under the hydrostatic or cubic compression which exists within the

earth, granite will sustain a load of nearly 100 tons to the square inch, or about seven times the load which will crush it at the surface under the usual conditions of a laboratory test; and that since open cavities of small size may exist at a depth of 11 miles and even at greater depths when filled with fluids or gases, veins may extend to a greater depth than it is now possible to follow them.

Radioactivity.—T. C. Chamberlin discusses (*Jour. of Geology*, Vol. XIX, 1911) the bearings of radioactivity on geology, with particular reference to heat and the planetesimal hypothesis.

Underground Waters.—J. F. Kemp (Bull. 159, New York State Museum) describes in detail the geological conditions, and discusses the origin, of the mineral springs of Saratoga. He is inclined to postulate a deep-seated origin for the carbonic acid gas, the chlorides, etc., and the sodium carbonate. He regards artesian waters as probably mingling with these solutions, furnishing some of the motive power. The more pronounced vents lie in or near a fault which passes through Saratoga Springs. Another item in connection with the dynamics of underground water is presented by Ziegler (*Amer. Jour. of Sci.*, Aug., 1912) in a study of the origin of the siliceous oölites at the top of the Cambrian in the Beekmantown beds in central Pennsylvania. He regards the oölites as in part the result of the replacement of oölitic limestones, but to a greater extent as directly deposited about pure quartz grains from hot solutions of silica.

Coral Reefs.—J. P. Smith in writing on the coral reefs of northern California and northward along the coast of Alaska in the Triassic system, where the existing family of *Astræidae* is represented, notes that since these reef builders are now found only in tropical seas with a minimum temperature of 74 deg. F., the Triassic Pacific waters had a tropical temperature along the North American coast up to 60 deg. north latitude (*Amer. Jour. Sci.*, Feb., 1912).

Other Contributions.—In the 31st Report of the New York State Geol-

ogist, 1912, Reudemann reports upon the occurrence of extensive overthrusts in the region of Ordovician rocks about Schuylerville. The effects of weathering in the production of rounded hills called "demoiselles" on Entry Island, one of the Magdalen group, are described by J. M. Clarke in the same report. D. L. D. Cairnes (*Bull. Geol. Soc. of Amer.*, Vol. XXIII, 1912, pp. 333-348) describes the processes of erosion of mountain ridges and the filling of intervening depressions in portions of Yukon and Alaska through the combined action of frost and transporting agencies, denominating the grading of the surface in this manner "equiplanation."

Structural Geology.—The report of the Maryland Geological Survey (Baltimore, 1911) on the Cretaceous of that state, largely devoted to the description of fossils, presents an excellent exposition of the diagnosis of sediments due to the agency of marine waters, rivers, and winds, applied to the interpretation of the structure of beds of sandstone and clay.

Prof. R. A. Daly presents (*Annual Summary Report of the Geol. Survey of Canada for 1911*) the results of a reconnaissance of a part of south-central British Columbia, which region includes below a well developed Paleozoic and later series of strata, a great thickness of Pre-Cambrian works. The lowest Pre-Cambrian, the Shuswap series, is held to be 26,500 ft. thick.

The U. S. Geological Survey has issued the following folios of the geological map of the United States: No. 180, Claysville, Penn.; No. 181, Bismarck, North Dakota; No. 182, Choptauk, Maryland.

The most important publication of the year is the geological map of North America on a scale of 1:1,500,000 got out by the U. S. Geological Survey with the coöperation of the surveys of Canada and Mexico. This map, a republication and revision of the map issued by the International Congress of Geologists, Mexico, 1903, displays the distribution of the large systems of rock formations so far as the scale of the map permits. Most of the continent has been geologically mapped in a

broad way with reference to time groups; but geological details of distribution and structure except for parts of the United States and Canada are still lacking, and it must be several decades before accurate geological surveys of vast territories in the far North and in the Central American tract are brought to completion.

In explanation of such a map there is needed a comprehensive handbook of the geology of Canada, the United States, and Central America, presenting a *résumé* of the rock formations with notes on the economic importance of particular groups and a list of references to detailed reports. Such summary reports have been issued from time to time by the Geological Survey of India. Canada published one in 1863. Woodward's *Geology of England and Wales* serves the purpose for those countries. No such work has been attempted for the United States in a manner to meet the needs of a numerous class of persons.

Philippine Islands.—The geological work done in the Philippines since the American occupation has been mainly of an economic character. Ferguson (*Economic Geology*, Vol. 6, 1911, pp. 110-137) gives an account of the geology of the islands and a geological map.

Glacial Geology.—President Fairchild of the Geological Society of America recapitulates the history of the great glacial lakes and the invasion of the sea about the northern borders of the Adirondacks at the close of the glacial period (Bull. N. Y. State Museum, 1911). Our knowledge of the Pleistocene history of the Rocky Mountain and Great Basin region began with the monograph of Gilbert on Lake Bonneville, a great fresh-water lake occupying the basin of the existing Salt Lake basin. W. W. Atwood and K. F. Mather describe (*Jour. of Geology*, July-Aug., 1912) the local glacial deposits of the San Juan Mountains in Colorado. Three glacial epochs are recognized. The earlier drift deposits are found characteristically on the divides, as the result of the cutting of deep ravines in the mountains since the first of these ice advances. These discov-

eries agree with those over the central plains in showing the complexity of the glacial period and the consequent duration of the Pleistocene.

Other Contributions.—J. W. Goldthwaite (*Amer. Jour. Sci.*, Oct., 1911) describes the raised beaches and a 20-ft. terrace and sea-cliff along the lower St. Lawrence River. Joseph Barrel (*Bull. Geol. Soc. of America*, Vol. 23, 1912, pp. 377-446) describes criteria for the recognition of ancient delta deposits.

Bibliography.—The U. S. Geological Survey has issued, from time to time, a complete list of publications on the geology of North America, the parts of which are given in the following list. Annual additions to this series of bulletins make it possible to find readily all the available published information concerning the geology of the surveyed portions of the continent.

DARTON, N. H.—*Catalogue and Index of Contributions to North American Geology, 1732-1891.* (Bull. 127, 1896.)

WEEKS, F. B.—*Bibliography and Index to North American Geology, Paleontology, Petrology, and Mineralogy, for the Years 1892-1900.* (Bulls. 188-9, 1902.)

—*Bibliography, etc., for the Years 1901-1905.* (Bull. 301, 1906.)

—and NICKELS, J. M.—*Bibliography of North American Geology for 1906-07.* (Bull. 372, 1909.)

NICKELS, J. M.—*Bibliography, etc., for 1908.* (Bull. 409, 1909.)

—*Bibliography, etc., for 1909.* (Bull. 444, 1910.)

—*Bibliography, etc., for 1910.* (Bull. 495, 1911.)

Prof. W. H. Hobbs has written a text-book of physiographic geology, *Earth Features*, which presents in vigorous style a large amount of illustration of geological change recently described in reports from all parts of the world.

ECONOMIC GEOLOGY

F. L. RANSOME

Ore Genesis.—Among studies of ore deposition, that of J. E. Spurr, G. H. Garrey, and C. N. Fenner (*Economic Geology*, Vol. VII, 1912, pp. 444-84) on the contact deposit of the Dolores mine, San Luis Potosi,

Mexico, and the accompanying paper by Spurr (*ibid.*, pp. 485-92) are of general interest. The results of the particular investigation described by the three authors mentioned are interpreted by Spurr as confirming and rounding out a general hypothesis of ore genesis propounded by him some years ago, in which ore deposition is considered as a phase of magmatic differentiation—that is, of that process whereby molten rock-substance separates on cooling into gaseous or liquid emanations and rocks of various kinds. He distinguishes seven principal zones of ore deposition, concentric with respect to the magmatic source, each characterized by the dominance of one or more metals in connection with a certain group of minerals. At any one time deposition may be taking place typically in all seven zones, but with falling temperature, which he concludes is the condition of sulphide deposition, the mineral groups characteristic of any one of the outer zones may be imposed on the minerals previously deposited in successive inner zones.

Enrichment.—The processes of enrichment, whereby lean deposits of metallic sulphides have been converted into ore by the downward percolation of water from the zone of oxidation, have been ably treated by Prof. W. H. Emmons (*Bull. No. —, U. S. Geological Survey, 1913*), who has summarized the literature on the subject, has added to our knowledge in some important respects from his own studies, and has fully discussed the available data.

Copper Ores of Butte, Montana.—During the year two important publications have dealt with the genesis of the copper deposits of Butte, Montana. In the first, a paper by Charles T. Kirk (*Economic Geology, Vol. VII, 1912, pp. 35-82*), are reached the conclusions that the primary vein minerals at Butte, including the enargite, were deposited by hydrothermal solutions from the granite magma; that the chalcocite, including the compact form which some observers have regarded as of primary origin, has been deposited by downward enrichment by meteoric waters; and that the limits of this secondary deposition of chalcocite

have not been reached even at the great depth of 3,000 ft. The second publication is the long-expected report by W. H. Weed (*Professional Paper No. 74, U. S. Geological Survey, 1912*), who also concludes that the primary quartz-pyrite veins were deposited by emanations from a deep-seated mass of siliceous magma, from which came also rhyolite porphyry and rhyolite that cut the prevailing granite as dikes. The subsequent deposition of the ore minerals chalcocite and enargite is treated under the general head of "Concentration Processes" and under the sub-head of "Secondary Enrichment." Presumably, therefore, Weed regards these minerals as in the main due to enrichment by descending waters—an inference that appears to be borne out by his detailed descriptions of the veins. Yet there is no definite general statement of this opinion and to most readers the discussion of genesis will seem disappointingly brief and inconclusive.

Silver-Lead Ores.—Knowledge of the occurrence and genesis of argentiferous lead ores has been increased by the appearance of the "Geology and Ore Deposits of the Park City District, Utah," by J. M. Boutwell (*Professional Paper No. 77, U. S. Geological Survey, 1912*). It is shown that these deposits occur in sedimentary rocks, largely as replacements, within a few hundred feet of intrusive dioritic masses, and that the intrusion was responsible for their deposition. Two periods of ore formation are recognized. The cooling dioritic magma is apparently regarded as the source of most of the ore constituents, although the author rather cautiously avoids an entirely definite statement on this point. The same knotty problem has recently been under discussion in connection with the very productive lead-silver deposits of the Coeur d'Alene district, Idaho. Ransome's conclusion (*Professional Paper No. 62, U. S. Geological Survey, 1908*) that the metallic constituents of those ores were probably given off from a deep-lying mass of solidifying monzonite and are connected with contact metamorphism has received support from S. J. Schofield (*Eco-*

nomio Geology, Vol. VII, 1912, pp. 351-63), but has been opposed by O. M. Hershey (*Mining and Scientific Press*, June 1 and 8, and July 15, 1912), who maintains that there were 12 distinct stages of metallization, ten of which are connected definitely with nine systems of faults of different ages. His conception is that the commercial ore bodies were formed, through the agency of water squeezed out of the rocks by thrust faulting, from materials leached from the earlier leaner or more disseminated deposits. The soundness of his conclusions has been questioned by Ransome (*Mining and Scientific Press*, Aug. 3, 1912).

Tin Ores.—The geologic features of tin deposits have recently been broadly summarized by Ferguson and Bateman (*Economic Geology*, Vol. VII, 1912, pp. 209-62), and J. F. Singewald (*ibid.*, pp. 263-79) has discussed the gradations between tin deposits, ranging from those of direct magmatic segregation to those of hydrothermal origin. The conclusions of the two papers are strikingly in accord. Mention may be made here also of the very full bibliography of tin by F. L. and E. Hess (*Smithsonian Miscellaneous Collections*, Vol. LVIII, No. 2, 1912).

Experimental Study of Ore Deposition.—From the experimental side, solution of the problems of ore deposition has been notably advanced by the work, in the Geophysical Laboratory of the Carnegie Institution, of E. T. Allen, T. L. Crenshaw, John Johnston, and E. S. Larsen, on "The Mineral Sulphides of Iron" (*Amer. Jour. Sci.*, Vol. XXXIII, 1912, pp. 169-236), whereby have been determined the physical and chemical conditions under which pyrite, pyrrhotite and marcasite form. A second paper, by Allen, Crenshaw, and Merwin (*Amer. Jour. Sci.*, Vol. XXXIV, 1912, pp. 341-96), extends the study to the minerals sphalerite, wurtzite, greenockite, cinnabar and metacinnabar.

Coal.—The origin of coal is still a live question and many diverse views are held. The problem has been attacked by chemists, botanists, and geologists, most of whom have lacked sufficient breadth of knowledge or

experience to survey the whole field. Consequently, many of the hypotheses rest on too narrow foundations. As David White has well said in a recent review:

Men who have happened exhaustively to examine one of the really very rare cases of transported organic matter (allochthonous deposits) have argued for transportation in most, if not all, cases. Some who found great numbers of spores in a particular coal concluded that all coals must be largely composed of spores. Other authors, ignorant of the occurrence of bituminous coals and sub-bituminous coals or lignites in the same series and basin, formed from the same plants in a similar state of disorganization, have insisted that lignites never existed as peats and that higher-grade coals were never lignites. . . . Many of the papers are contributed by chemists who have had little or no knowledge of coals of different sorts as they exist in beds, basins, and formations of varying ages.

Considerable light on this question may be expected from a monograph on "The Formation of Coal Beds" by the veteran geologist, J. J. Stevenson, of which the introductory part appeared in 1911 (*Proceedings of the American Philosophical Society*, Vol. L, 1911, pp. 1-116).

Petroleum.—Opinions on the origin of petroleum are as varied as the views on coal. The principal contributions of late have come from studies of the Burma fields. Murray Stuart of the Geological Survey of India, accepting as proved the organic origin of oil and holding that, save in limestones, it is mainly of vegetal derivation, has lucidly propounded the thesis that the Burma oil was actually formed at the surface in lagoons or swamps and was deposited as globules entangled in the muds that subsequently were consolidated as the oil-bearing beds.

Rock Salt.—The mode of formation of the curious rock-salt domes of our gulf coastal plain and of Germany has been discussed during the year by F. Hahn (*Economic Geology*, Vol. VII, 1912, pp. 120-35), but remains one of the baffling problems of geology. Whether these salt bodies attained their apparently intrusive relation to the enclosing sedimentary beds by intense local folding in connection with a practical plasticity of

the salt mass, whether the strata were thrust aside by the crystallizing force of a column of hot brine, or whether they are to be accounted for by some combination of mechanical deformation with forces of crystallization or chemical replacement, are moot questions.

MINERALOGY AND PETROGRAPHY

CHARLES PALACHE

Solid Solution in Minerals.—It is well known to mineralogists that there are certain minerals to which no satisfactory chemical formulae can be assigned which agree with the results of analysis. It has been shown during recent years by several American chemists that some of these cases certainly, and most of them probably, may be considered to be due to solid solution of foreign ingredients. The dissolved material need have no close chemical similarity to the solvent and the resulting solid is physically homogeneous. Nephelite is the most interesting and best studied case of this sort. The natural mineral approximates to the composition $\text{NaAlSi}_3\text{O}_8$, but highly complex expressions are required to express actual results of analyses, no two being alike. Foote and Bradley (*Am. Journal of Science*, 31, 25, 1911) conclude that the above formula is that of the pure substance which has also been prepared synthetically, but that as crystallized from magmas, nephelite always contains an excess of silica in solid solution. Schaller (*Journal Washington Academy of Science*, 1, 109, 1911) and Bowen (*Am. Journal of Science*, 33, 49, 1912) are in substantial agreement on this matter and the latter (*ibid.*, 33, 551, 1912) has shown by synthetic preparations that nephelite can maintain in solid solution as much as 35 per cent. of anorthite without material alteration of its crystal form or apparent homogeneity. Foote and Bradley (*ibid.*, 33, 433, 1912) also show that analcite contains silica and water in solid solution in variable amounts and the same explanation will doubtless hold for many of the variable zeolites. Allen (*ibid.*, 33, 169, 1912) has shown by skillful synthetic prepara-

tions that the anomalous formula of pyrrhotite, generally written $\text{Fe}_{n+1}\text{S}_n$ is to be explained by the presence of sulphur in solid solution in ferrous sulphide, FeS , the amount dissolved depending on the temperature, with a maximum of nearly 6 per cent. at 600 deg. C. The full recognition of the existence of solid solution among minerals marks an important advance in our knowledge of their nature and constitutes the most important American contribution to mineralogical science during the year.

Textbooks of Mineralogy.—Roger's *Introduction to the Study of Minerals* (McGraw-Hill, 1911) is the most complete, compact and practical textbook of mineralogy that has yet appeared by an American author. Phillips' *Mineralogy, an Introduction to the Theoretical and Practical Study of Minerals* (Macmillan, 1912), is similar in scope, but somewhat less compact. The latest revision by Ford of Dana's *Manual of Mineralogy* (Wiley, 1912) is practically a new work, being rewritten throughout, but is less satisfactory as a textbook than the work named above.

Microscopic Petrography.—Since the introduction of the microscope in the study of rocks by Sorby and Zirkel half a century ago it has been the most efficient tool in the development of the science of petrography to its present form. With the growth of the science the microscope has been more and more called upon to attain quantitative, rather than merely qualitative, data of the mineral constituents of rocks and to do this upon material of ever smaller dimensions. The most thorough and complete presentation of the progress thus far made in these directions is contained in Dr. Wright's paper from the Geophysical Laboratory of the Carnegie Institution on "Methods of Petrographic-Microscopic Research, their Relative Accuracy and Range of Application" (Carnegie Institution of Washington, 1912). This is a learned and systematic presentment of numerous previously published pamphlets. Besides giving an account of the many recent improvements in the microscope and its accessories, many of them the inventions of the author, there is a full

theoretical treatment of the optical system of the microscope and of the various operations commonly employed for mineral determination. As indicated by the title the work is especially devoted to discussion of the accuracy of various methods, and the introduction of numerous improved or novel graphical solutions of such problems as arise, for instance, in the determination of the optic angle in minerals contributes very materially to this design. This exhaustive work reflects credit on American research in this field.

EARTHQUAKES AND VOLCANOES

HARRY FIELDING REID

Earthquakes.—There have been several severe earthquakes since last year's report. A little after 10 o'clock on the morning of Jan. 31, 1912, a fairly strong earthquake occurred somewhere in central Alaska; its exact center is not known, but it was felt over the region between the Yukon River and the southern coast of Alaska and was strong enough to be recorded at many distant seismological observatories. The area over which the shock was sensible was about 120,000 sq. miles. Three lighter after-shocks were reported from Valdez later on the same day and six more within the nine days following. On March 11 a strong shock occurred with its origin under the sea northwest of British Columbia; it was quite severe at the northern end of Vancouver Island and was even felt in Valdez, Alaska, and at Seattle, Wash., places which are about 1,400 miles apart. At 10 p. m. on July 6 a very violent shock was felt throughout southern Alaska; its origin was probably just north of the Mt. McKinley range; great avalanches of snow and ice fell from the higher mountains; this is the strongest shock ever reported from Fairbanks, where it lasted for a minute and a half, and caused some destruction of property. After-shocks were frequent for a week near the origin; several were felt at Fairbanks, one, on July 8, being nearly as strong as the original shock. It

has been supposed that this shock was connected with the eruption of Mt. Katmai, which will be mentioned later, but in all probability there was no relation between the two phenomena.

Mexico has suffered more severely than other North American states. A very strong shock in the State of Guerrero on Dec. 16, 1911, is said to have overthrown a few buildings in Chilpanzingo, 120 miles south of Mexico City; the shock was felt in the latter place and caused some consternation. Weaker shocks were reported from Mexico City on Dec. 22 and again on Jan. 28, 1912. A very remarkable series of shocks was felt near the town of Guadalajara in western Mexico; they began on May 8, and about 50 shocks were felt during the remainder of the month; cracks were made in buildings and many people were so much alarmed that they left the city. The shocks seem to have been felt only over an area of about 100 sq. miles. They continued during June and the early part of July; 23 shocks occurred on July 19, and several thousand persons left the city in addition to those who had gone earlier; the earthquakes culminated on July 20, with a very severe shock, which destroyed a great part of the city, and caused the death of many people. The shock was felt at sea off the western coast of Mexico. It was reported that the volcano Colima, which is only 90 miles south of Guadalajara, was in strong eruption, but this was a mistake; the volcano seems to have remained perfectly quiet.

On June 6, at 12.40 a. m., a severe shock occurred in Costa Rica; its center was about five miles west of the volcano Poás and about 20 miles northwest of San José, in which city the shock was sharply felt, but no damage was done. The area shaken probably amounted to about 30,000 sq. miles. There were many light after-shocks and the rivers Sarchi and Anono were greatly flooded, probably by the bursting of a crater lake, but there was no evidence of any volcanic activity. This shock recalls the earthquake of May 4, 1910, which destroyed the town of Cartago (AMERICAN YEAR BOOK, 1910, p. 572),

but the center of the later shock originated nearly 40 miles northwest of that of the earlier one.

A moderate shock was felt at 5.30 a. m., June 12, over about 7,500 sq. miles in southwestern South Carolina; the strongest movement seems to have been along a line between Columbia, S. C., and Augusta, Ga. Northern Illinois and southern Wisconsin were shaken at 10.21 a. m., Jan. 2. The shock was strongest in the neighborhood of Aurora, Yorkville and Morris, Ill., where some buildings were injured; at Freeport it was quite sharp. It was felt as far north as Milwaukee and Madison, Wis., but not as far south as Peoria, Ill. The area shaken was over 20,000 sq. miles.

On Aug. 18, at 2.12 p. m., a shock occurred in northern Arizona, which was felt from Gallup, N. M., to Seligman, Ariz., and from the neighborhood of Prescott in the south to Escalante, Utah, in the north, the total area shaken being about 50,000 sq. miles. A light after-shock was felt at Flagstaff at 3 a. m. the next day. An area of probably 60,000 sq. miles in eastern California and western Nevada was shaken at 7.52 p. m. on Jan. 4. The shock was strong enough to overthrow movable objects in the northwestern part of Inyo Co., Cal., and was reported as far as Fresno and Bakersfield in the San Joaquin Valley. A more moderate shock was reported from Grass Valley, Cal., and Reno, Nev., on Aug. 30. The shock reported last year (*AMERICAN YEAR BOOK*, 1911, p. 591) on July 1, 1911, in central California seems to have had its origin a little to the south of Mt. Hamilton, and a number of lighter shocks which were felt at Mt. Hamilton on the following dates were probably connected with the same origin: Nov. 25, Dec. 17 and Dec. 31, 1911; Jan. 3, Jan. 21, Feb. 19, March 8, May 9, and May 20, 1912. A number of light shocks have been felt in the region southwest of San Francisco Bay and may indicate slight movements on the San Andreas fault; they occurred on March 2, March 12, July 4, July 11, Aug. 23, and Sept. 12; the last one was felt in San Francisco. They were all very light.

Light shocks were also felt in southern California: at Pasadena, Nov. 1 and Dec. 23, 1911; at Colton and surrounding country, Nov. 21, 1911, and at San Diego, April 14 and May 15, 1912. A moderate shock was felt in the Panama Canal Zone during the night of April 16.

In the early morning of Jan. 4, a slight shock was felt at Santiago de Cuba and on Feb. 8, one in Martinique. Two light shocks are reported from the Hawaiian Islands, one on April 29, in Honolulu, another, May 22, in Hawaii.

Just east of the Philippine Islands the bottom of the ocean drops suddenly to great depths, and along the slopes of this deep earthquakes are not infrequent. A fairly strong shock occurred at 3.39 a. m. March 30, just north of Samar Island, which was felt in that island and in Leyte and Luzon.

The Seismological Society of America was organized soon after the California earthquake of 1906; it has members in North, South and Central America. A bulletin has been published quarterly since March, 1911, which has stimulated interest in seismology, and has published information about earthquakes in North America, which might otherwise have been lost.

Volcanoes.—The great festoon of islands stretching southwest from Alaska is volcanic and contains many volcanoes which from time to time burst into activity. On the afternoon of June 6 a tremendous explosion took place in the volcano Katmai, which is situated on the Alaskan peninsula in latitude 58 deg., immediately west of Kodiak Island, and not far from the coast. Immense quantities of volcanic dust were thrown into the air, and, falling, completely covered the surrounding country. Earthquake shocks, brilliant electric displays and strong explosions accompanied the eruption, but it does not seem to have rained. At the village of Kodiak, the fall of dust continued until about nine o'clock the next morning, when it ceased; but about noon fresh outbursts of the volcano took place, and the dust filled the air to such an extent that it became as dark as night.

By 2.30 p. m. on June 8, the violent part of the eruption was over and the skies cleared. At Kodiak village, 100 miles east of Katmai, the volcanic dust was found to be about a foot thick; on the slopes of the volcano it must have been many times as much. The dust falling in the towns about Cook Inlet and Prince William Sound made it clear to the people there that a great volcanic outburst had taken place some days before they learned which volcano was in eruption. The dust was noticed even in Juneau and Dawson, which are about 700 miles from the volcano. Fortunately there was no loss of life. The inhabitants of the

villages close to Katmai were all away fishing and therefore suffered no personal injuries, though their houses were destroyed by the weight of the dust falling on them. The enormous quantity of ejected dust led to the rumor that several volcanoes were in eruption, but it developed later that all the havoc was due to Katmai alone. During the summer the volcano continued to emit steam and perhaps some dust, but the violent part of the eruption was confined to less than 48 hours. (See also XIX, *Agriculture*.)

The volcanoes of the Philippine and of the Hawaiian Islands have been quiescent during the year.

METEOROLOGY AND CLIMATOLOGY

ROBERT DE C. WARD

The Weather Bureau.—At the Research Observatory of the Weather Bureau soundings of the upper air have been continued with increasingly important results, and additional investigation has been made of the temperature-distribution between summit and base stations in the mountains of Colorado and elsewhere. A chart of the northern hemisphere was prepared each morning in the forecast room in Washington, the most northerly stations from which reports were received being Nome, Tanana and Eagle, in Alaska, and the most southerly, Manila. Meteorological charts were issued monthly for the North Atlantic, North Pacific and Indian Oceans, and for the Great Lakes, and quarterly for the South Atlantic and South Pacific Oceans. The determination of the depth of snowfall in the mountain regions of the West, for the purpose of ascertaining the amount of water available for agricultural and commercial interests during the coming spring and autumn seasons, has been successfully undertaken. The New York Meteorological Observatory in Central Park, founded by Dr. Daniel Draper in 1868, the first in the country to be equipped with self-recording instruments, and the expenses for maintaining which were met by municipal appropriations, has

been taken over by the Weather Bureau.

A Textbook of Meteorology.—There has been increasing need of a textbook of meteorology which should present the most recent developments of the science, and which should, at the same time, give the reader and student a well-selected list of references to the literature. In Professor Willis I. Milham's *Meteorology* (Macmillan) we have the results of the author's experience in teaching during the past eight years at Williams College, supplemented by study at the Weather Bureau in Washington. The book gives a clear and effective presentation of the status of meteorological science in a form which renders it extremely useful for teaching. It is one of the year's most notable contributions to the progress of American meteorology.

Free Air.—Professor W. J. Humphreys has devoted himself in particular to the physical and dynamical problems which have arisen in connection with the results obtained by means of kites and balloons. He has examined the data obtained on 74 balloon ascents made on cloudless days, and finds a tendency toward a maximum of humidity just above the cumulus level, although no clouds were present there at the time of observation. (*Bull. Mount Weather*

Observatory, Vol. IV, Pt. 3, 1911). He points out, in another paper (*ibid.*), that the assumption that the height and temperature of the isothermal layer region are determined essentially by outgoing earth radiation has but one serious objection, which is the fact that near the equator, where the surface temperature is highest, the isothermal region is much colder than elsewhere. The suggestion is made that the greater prevalence of cirrus clouds in the equatorial region, acting as a shield, partially protects the outer atmosphere from the radiation at lower levels, and thus allows it to grow cold through its own radiation to space. Professor Humphreys further finds (*ibid.*, Vol. IV, Pt. 6, 1912) that there are three layers of dust in the atmosphere. The first, relatively heavy and dense, is seldom more than one kilometre thick, and is due essentially to the surface winds. The second is made up of somewhat lighter dust, is less dense, extends to the level of the cumulus clouds, say, four kilometres, and like them is due to rather strong vertical convection. The third layer is the least dense of all, extends to the under surface of the isothermal region, and is due chiefly to the convection of cyclonic storms.

Professor William R. Blair's work has been largely in connection with the compilation and reduction of the data obtained in the free air (*ibid.*, Vol. IV, Pt. 3 and 5, 1911, and Pt. 6, 1912; Vol. V, Pt. 1, 1912). He has also worked up the data obtained during four series of sounding balloon ascensions undertaken by the Weather Bureau during the past two years, and has combined these with additional data obtained by the Blue Hill Observatory in several series of free balloon ascensions at St. Louis, and in individual ascensions from Pittsfield, Mass. These observations (*ibid.*, Vol. IV, Pt. 4, 1912) indicate conditions in the larger convection units similar to those found in the smaller, and support the conclusion that, in general, the peculiarities in the temperature gradient up to and including the upper or permanent inversion owe their existence to the influence of convection on the distribu-

tion of the constituents, especially of the water vapor, of the atmosphere.

Prof. Alfred J. Henry has continued his studies on the variation of temperature and of vertical temperature gradients at summit and base stations by discussing the data for Fraser (8,560 ft.) and Corona (11,660 ft.), in Colorado (*ibid.*, Vol. IV, Pt. 3, 1911); for Hilo and Kapoho (about at sea-level) and for Humuula (8,685 ft.) and Volcano House (4,000 ft.), in Hawaii (*ibid.*, Vol. IV, Pt. 5, 1912); and for Mt. Weather and adjacent valley stations (*ibid.*). Prof. Henry has also investigated the daily temperature changes obtained in the free air at Mt. Weather by means of kites up to an altitude of 4,000 metres (*ibid.*, Vol. V, Pt. 1, 1912).

Frost Prediction and Frost Protection.—Special attention is being paid by the Weather Bureau to frost warnings and to methods of frost protection. Several papers on this subject have been published during the year in the *Monthly Weather Review*. Prof. A. G. McAide has invented a "frost cartridge" which, when lighted, gives off a dense smoke and serves as a convenient form of "smudge." E. A. Beals has made careful investigations in four important fruit districts on the Pacific coast (U. S. Dept. Agriculture, Weather Bureau, Bul. 41, 1912). The conditions of frost occurrence on the cranberry bogs of Wisconsin, Massachusetts and New Jersey have been studied by Prof. H. J. Cox (*Yearbook of the Department of Agriculture*, 1911).

Rainfall and Cyclones.—The usual method of observing and of averaging rainfall, by days, months and years, is from many points of view unsatisfactory, because it does not show the causes and conditions of the rainfalls. William G. Reed has made a study of the amounts and distribution of rainfalls over the United States in connection with a considerable number of individual cyclones, and has charted his results (*Monthly Weather Review*, Vol. 39, 1911). The irregularity in the distribution of the heavier and lighter rainfalls is a very striking feature. This paper is along new lines for this

country. It is the first general study of its kind for the United States.

Changes of Climate.—Prof. Ellsworth Huntington, in *Palestine and Its Transformation* (Houghton Mifflin, 1911), believes that there has been a gradual diminution of rainfall in Palestine from the earliest historical times to the present era, with pulsations of dryer and wetter periods. These pulsations he finds coinciding with great race movements. Replying to certain criticisms regarding his conclusions he points out (*Bull. Amer. Geogr. Soc.*, Vol. 44, 1912) that a study of the rate of growth of the Big Trees of California gives a curve showing climatic fluctuations which agree closely with those previously worked out by him for western and central Asia. Prof. Huntington believes that the changes indicated in these curves "are of sufficient intensity to cause serious modifications in the economic conditions of the inhabitants of the country."

Climatic Influences of Cities.—The question as to how far cities affect the local climate has attracted attention during the year. A study of the temperature and precipitation records for New York City, by George W. Mindling (*Monthly Weather Review*, Vol. 39), furnishes

no satisfactory evidence either of increased temperature or decreased precipitation, except such as has been shown to result from natural causes. The assumption that artificial heating has affected the true climate of any city is not warranted. A comparison of the meteorological data for Boston and Blue Hill Observatory, by Andrew H. Palmer (*ibid.*), leads to the conclusion that "the heat generated by great cities is not changing their climates in any appreciable degree."

A comparison of the Weather Bureau records at Columbus, Ohio, and on the campus of the State University, about three miles north of the center of the city, leads Prof. J. Warren Smith to the conclusion (*ibid.*, Vol. 40, 1912) that, in general, well-located thermometers in cities give reliable data, the differences between the readings obtained at the above-mentioned stations being very slight.

Climate and Crops.—Henryk Arcowski has continued his studies on climate and crops with a discussion (*Bull. Am. Geogr. Soc.*, Vol. 44, 1912) of the solar constant and the variations of atmospheric temperature at Arequipa, Peru, and at some other stations. The results are not yet conclusive.

TERRESTRIAL MAGNETISM

R. L. FARIS

Magnetic Work on Land.—The systematic magnetic surveys in the United States, Canada, India, and Egypt were continued during the year by the respective governments. The Department of Terrestrial Magnetism of the Carnegie Institution of Washington, in continuation of its magnetic survey of the world, continued its work in Asia (China, Indo-China, and Siam), Northern Africa, South America, and Australia, in the latter in coöperation with the governmental organizations. Preparations were made for making a magnetic resurvey of Japan, the work to be carried out under the same general plan as that followed in the first survey of 18 years ago, the resurvey to be completed in two

years. A magnetic party, under the direction of the Coast and Geodetic Survey, was at work in the Philippines for a greater part of the year, the special object of which was to secure secular-change data throughout those islands. Land magnetic surveys under the auspices of Great Britain, Italy, France, Germany, and Russia are also in progress.

Ocean Magnetic Work.—The magnetic survey vessel *Carnegie* has continued on the three years' ocean magnetic survey cruise mentioned in the YEAR BOOK for 1911 (p. 596), having visited the following ports: Manila, Suva (Fiji Islands), Tahiti, Coronel (Chile), and is now on its return trip across the South Atlantic. Within the year a total

sea mileage of upward of 25,000 miles was covered. The errors shown by the *Carnegie* observations in the magnetic-declination charts used by mariners in the China Sea, and in the Pacific Ocean between Manila and Suva, have been much less than those found last year for the Indian Ocean, being usually less than one degree, which is no doubt due to the fact that this region had been previously covered by the magnetic work of the *Galilee* and the results embodied in the latest magnetic-declination charts.

The maximum errors in the charts of lines of equal magnetic inclination and of equal horizontal force in the China Sea were 1.5 deg. in magnetic dip and one-fortieth part in horizontal force; in the Pacific Ocean between Manila and Suva, 3.5 deg. in dip and one-fourteenth part in horizontal force. When these charts were issued the results of the *Galilee* and of the recent Antarctic expeditions were not available.

Secular Variation over Ocean Areas.—The present cruise of the *Carnegie* having been arranged to intersect the courses of previous expeditions as frequently as possible, it is reported that important secular change data over ocean areas are being secured.

Instruments and Instrumental Constants.—The theory of the earth inductor and its applicability to use on board ship has been investigated and an instrument has been constructed by the Department of Terrestrial Magnetism of the Carnegie Institution and put on board the *Carnegie* at Tahiti. A new form of compass declinometer which has proved successful for observations of magnetic declination has been constructed by the Coast and Geodetic Survey.

The question of the difference between the experimental and computed moment of inertia of a magnet was further investigated experimentally. In the latest report concerning the magnetic survey of India (*Annual Report*, Board of Scientific Advice for India, 1911) it is stated that the investigation of the instrumental divergences in measurements of horizontal force was continued.

and some important facts in connection therewith were developed which indicate that the divergences are more complex than hitherto supposed.

Antarctic Magnetic Work.—The British and the Australian Antarctic expeditions made continuous series of magnetic observations at their headquarters in the south polar regions, and many magnetic observatories throughout the world made special series of magnetic registrations in coöperation with this work, which is designed especially to furnish data for the study of magnetic disturbance phenomena.

Special Observations.—In addition to the observations mentioned in the preceding paragraph, special observational work was carried out by magnetic observatories and institutions in coöperation with the magnetic work of the Carnegie Institution in South America at the time of the solar eclipse of Oct. 10, 1912. A number of the magnetic observatories throughout the world, including those in the United States, made special observations during the month of October in the hope of securing data of the sudden beginnings of magnetic storms, suitable for the further study of the time element in their propagation.

Bibliography.—Among the noteworthy books of the year may be mentioned Charles Chree's *Studies in Terrestrial Magnetism* (London), an account of the author's original work, and A. Schuster's *The Progress of Physics During Thirty-three Years (1875-1908)* (Cambridge), a collection of lectures, one of which discusses present theories of terrestrial magnetism in relation to certain observed facts. The latter author has contributed also to the *Proceedings of the Physical Society*, London, a paper entitled "A Critical Examination of the Possible Causes of Terrestrial Magnetism." Two important reports from Germany are G. Angenheister's *Die Island-Expedition im Frühjahr 1910. Erster Teil; die Erdmagnetische Beobachtungen* (Göttingen), and F. Bidlingmaier's *Deutsche Süd-polar Expedition 1901-03. Erdmagnetische See Beobachtungen, etc. II Teil: Deklination*

(Berlin). Nansen has discussed magnetic declination at the beginning of the sixteenth century (*Petermann's Geogr. Mitt.*, Gotha, Jan., 1912). In the *Journal of Terrestrial Magnetism* have appeared two papers by L. A. Bauer, "On the Cause of the Earth's Magnetism," and a paper by L. Steiner, "On the Magnetic Field of the Earth." The Coast and Geodetic Survey has published reports by R. L. Faris and D. L. Hazard covering magnetic observations for 1909-11.

A "Report on Lines of Equal Magnetic Declination in Maryland for 1910," by L. A. Bauer, appears in Vol. V of the publications of the Maryland Geological Survey. Bulletin No. 21 of the United States Lake Survey contains a magnetic chart of Lake Huron for 1911, on a scale of 1:1,200,000, with isogonic lines for every degree; and a report on magnetic declination in Hudson Bay has appeared in the *Report of the Canada Naval Service* for 1911.

GEOGRAPHY

PHYSICAL GEOGRAPHY OF LAND AREAS

W. M. DAVIS

U. S. Geological Survey.—The publications of the U. S. Geological Survey continue to be the largest source of information regarding the physical features of our country. The newly issued sheets of the topographical map are a delight in their increasing accuracy and their wealth of material. Two sheets taken at random represent the Livermore quadrangle, Me., where the imperfectly developed drainage of that strongly glaciated region is exhibited by the contrast of a chain of irregular lakes with the terraced valley of the Androscoggin a few miles to the west; and the Cutbank quadrangle, Mont., which includes a perfect illustration of a ragged escarpment between the higher and lower plains on the northwest and the southwest. These and many other facts, previously known only to local observers, are now plainly set before any one who wishes to study them.

The Geologic Folios of the Survey include a text to describe and explain the area represented in their maps; and the text opens with a brief geographical chapter, containing much material of value, but nearly always, as was pointed out a year ago, phrased in incompletely explanatory form. In recent folios, however, the explanatory element is increasingly greater than in earlier folios, so that there is reason to hope

that it may in the coming years be as fully developed as it is already in the geological sections; the annual steps of this progress from old-fashioned empiricism toward modern rationalism are as important as the annual publication of new folios.

The Monographs, Professional Papers, Bulletins, and Water-Supply Papers of the Geological Survey all deserve inspection by geographers. "The Geology of the Lake Superior Region," by Van Hise and Leith (Monograph LII), contains a chapter on the physical geography of the same region by L. Martin; he suggests that the lake basin is due to the excavation of the weaker part of a faulted mass beneath the surface of a widespread peneplain. Changes of level produced by the "Earthquake at Yakutat Bay, Alaska, in Sept., 1899," are finely described by R. S. Tarr and L. Martin (Prof. Paper, No. 69, 1912). The occurrence of uplifted peneplain blocks, now carved into mountainous form in "The Mount McKinley region, Alaska," is discussed by A. H. Brooks (Prof. Paper, No. 70, 1911) amid much geological matter. A study of "Denudation and Erosion in the Southern Appalachian Region" by L. C. Glenn (Prof. Paper, No. 72, 1911) tells of existing inorganic processes by which fields and valleys are locally devastated; these topics are as appropriately geographical as are the winds and tides. A vast amount of information about the composition of geographical things, such as rivers, lakes, oceans, and rocks, is stored in the "Data of Geo-

chemistry" by F. W. Clarke (2nd Ed. Bulletin 491, 1911); and endless statistical details of value in potamology, the science of rivers, are recorded in the long series of "Water-Supply Papers," of which some 300 numbers have now appeared.

Hydrographic Charts.—Various other government publications have a high geographic value. The charts of the Lake Survey (headquarters in Detroit) are now published in colors, with the result of being much more legible than when formerly printed only in black on white: the charts of Toledo and Duluth harbors may be cited as excellent examples, both harbors being of physiographic interest as in large measure due to submergence of valleys, the result of a rise of land to the northeast. The publications of the Mississippi River Commission (headquarters in St. Louis) include an unrivaled series of charts showing the changes in the course of the river as determined by earlier and later surveys; the annual reports of this Commission contain many physiographic nuggets buried in a mass of administrative details: for example, hydrographs showing the progress of successive floods down stream. The reports of the Isthmian Canal Commission include a map of the canal zone, which shows an example of a highly irregular shore line produced, or to be produced, by the partial submergence of a hilly district in the waters of Gatun Lake; thus offering an artificial reproduction of the irregular shore line of Chesapeake Bay, of which the best general map is given in a fine two-sheet chart issued by the U. S. Coast and Geodetic Survey, which may well be taken as the type of its kind for the world.

State Geological Surveys.—From state geological surveys mention should be made of a report on Prince George's County, Md., the latest one of a series of county reports published by the Geological Survey of Maryland; the text contains a chapter on the physiography of the county, and the atlas includes two maps, 1:62,500, one giving the topography alone, the other with geological colors added. Another volume of geo-

graphical interest is "The Glacial Waters in the Black and Mohawk Valleys" by H. L. Fairchild, issued by the New York State Museum (Museum Bulletin, 160, 1912); it is the latest of several reports by this author, in which much physiographic detail, inherited from the closing phases of the glacial period, is presented. Reference may here be made to a report on "Southern Vancouver Island" by C. H. Clapp, published by the Geological Survey of Canada; the mountains of Vancouver are described as carved out of an uplifted peneplain, as is now found to be the case in so many ranges all over the world.

Other American Publications.—*Earth Features and their Meaning*, by W. H. Hobbs (Macmillan, 1912), is the leading American book of the year on the physical geography of the lands. It is explanatory in treatment throughout, and is profusely illustrated; but it is less systematic than could be wished. *The Elements of Geography*, by Salisbury, Barrows, and Tower (Holt, 1912), is a valuable addition to school and college literature; it is chiefly devoted to physical geography, as only the last 60 pages are given to a regional account of the United States. Although the existing geographical journals of the United States are not oversupplied with good geographical articles, the Association of American Geographers has undertaken to publish a yearly volume of *Annals*; Prof. R. E. Dodge, Washington, Conn., is editor. The longest article on physical geography in the first volume is by the present writer, on the "Front Range of the Rocky Mountains in Colorado," with special consideration of various methods of physiographic presentation.

Foreign Publications.—Among materials of foreign origin, the official *Mitteilungen der deutschen Schutzgebieten* deserve prominent mention: here one may find elaborate essays by K. Sapper on the "*Wissenschaftliche Ergebnisse einer amtlichen Forschungsreise nach dem Bismarck Archipel im Jahre 1908*" (1910), and by F. Jaeger on "*Das Hochland der Riesenkrater . . . Deutsch-Ostafri-*

kas" (1911). These handsome reports of thoroughgoing scientific quality are markedly superior to the reports on explorations that one occasionally finds in British "Blue-books." Indeed on reviewing these unlike publications one cannot help contrasting the serious cultivation of geography by a country now possessing few oversea colonies but wanting more, and the relative neglect of geography by a country now possessing the greatest extent of colonies the world has ever seen and yet not desirous of losing any of them. This contrast must have its consequences in the political geography of the next half century. The official cultivation of geography in British colonies is hardly better than at home; "The Physiography of the Proposed Federal Territory at Canberra," by G. Taylor (*Meteorology of Australia*, Commonwealth Bureau of Meteorology, Melbourne, Bulletin 6, 1910), has a title page of unquotable dimensions and an awkward style of publication and illustration. India, so long under British administration, is still so poorly described that the coastal plain north and south of Madras has lately been for the first time clearly portrayed, not by a Briton, but by an American, S. W. Cushing, who, as a Sheldon fellow of Harvard University, spent part of 1910 in field exploration of that region, long known but never properly studied. His article is entitled "The Geography of Godaverī, a District in India" (*Bull. Geogr. Soc. Phila.*, ix, 1911, 7-25).

If British physiographic enterprise is officially limited, it is more generously supported privately: witness the elaborate *Bathymetrical Survey of the Scottish Freshwater Lakes* in six volumes by Murray and Pullar (Edinburgh, *Challenger Office*, 1910); the maps and parts of the text have already been published in the *London Geographical Journal* and the *Scottish Geographical Magazine*, but many new chapters of text discuss the composition, temperature, and movements of the lake waters, and various other special topics; of these the chapter on "Scottish Lakes in Relation to the Geological Features of the Country" by

Peach and Horne deserves special mention.

An important French work is a series of five charts, 1:10,000,000, by L. Joubin, showing "*Bancs et récifs de coraux*" published in the *Annales de l'Institut océanographique*, founded at Paris by the Prince of Monaco. The charts, one of which is reproduced in the *Annales de Géographie*, 1912, have a simple legend of two colors, showing emerged and submerged reefs, and presenting these data more accurately than in any similar general charts yet published. One of the most elaborate French studies of recent years is a thesis by G. B. M. Flamand entitled *Recherches géologiques et géographiques sur le Haut-Pays de l'Oranie et sur le Sahara* (Lyon, Rey, 1911). Although it is largely concerned with geology it contains also an abundance of geographical matter; a second volume is promised of more purely geographical nature. Valuable studies by L. Gentil are *Le Maroc physique* (Paris, Alcan, 1912), and "*La géologie du Maroc et la genèse de ses grandes chaînes*" (*Ann. de Géogr.*, xxi, 1912, 130-158): one might wish that the phrasing of the second publication had been more geographical, as it appears in the leading French geographical journal; but this wish is almost neutralized by finding in the leading French geological periodical, the *Bulletin de la Société géologique*, several articles in recent years by de la Mothe on a subject so geographic as river terraces.

It is the same in Germany, where the journal of the national geological society contains valuable articles of a geographical nature, such as "*Zur Morphologie der Präglaziallandschaft in den Westschweizer Alpen*" by H. v. Staff (*Zeitschr. deut. Geol. Ges.*, lxiv, 1-80) and "*Die morphologische Entwicklung der süd-deutschen Schichtstufenlandschaft . . .*" by H. Beck (*ibid.*, 81-232), which abound in material concerning the form of the regions treated, although they are largely phrased, as is proper for geological studies, in a nongeographical style.

The *Atlas of Finland*.—No geographical publication of recent years

deserves higher commendation than the new edition of the atlas of Finland, with two volumes of text published in Finnish, Swedish, and French by the Geographical Society of Finland (Helsingfors, 1910-11). An examination of this masterly work, to which many experts have contributed, ought to show our geographical societies how large a field they still have to cultivate without passing the boundaries of their home state. Here we find admirable maps of surface form, geological structure, surficial formations, rivers and rapids, various climatic data, peat deposits, forests, density of population (a chart showing density of population by red dots, each representing ten inhabitants, is to be especially commended), rural schools, archaeological sites, and many other matters. The presswork is unusually good, and the choice of colors remarkably agreeable.

American Geographical Society.—The transcontinental excursion of 1912, by which the American Geographical Society of New York celebrated its sixtieth anniversary, was briefly mentioned as in project a year ago: it is now an accomplished success. Although not especially directed to any one branch of geography, more attention was necessarily given, during the eight weeks' journey of over 13,000 miles, to land forms than to any other one subject. The excursion left New York in a special train on Aug. 22; it was singularly fortunate in attracting from 13 European countries a representative body of 40 geographers who made the entire journey; in enlisting as permanent or as temporary members a large number of American geographers, so that the average number on the train was 60 to 65; in visiting a great number of interesting points, with extremes at Duluth, Seattle, San Francisco, Phoenix, and Birmingham; in the lavish hospitality with which the party was welcomed and the generous enterprise with which it was conducted on side trips by local hosts; and in completing the itinerary without accident or illness. Return to New York was made on Oct. 16; two meetings and a closing ban-

quet were held in that city on Oct. 17 and 18.

The International Geographical Congress at Rome, first announced for October, 1911, then deferred to the spring of 1912, has been again postponed to the spring of 1913.

OCEANOGRAPHY

G. W. LITTLEHALES

Compendium of Oceanography in English.—It is not alone through her fleets upon the ocean that oceanography makes progress. Investigations in the marine laboratory and discoveries in the cognate sciences of physics, chemistry, and biology have sometimes yielded more advancement than the most distant and perilous voyages; and progress has likewise to be recorded when the extent of knowledge in relation to the ocean has been successfully summed up to form a new starting point from which observation and investigation may set out afresh. The recently printed work of Murray and Hjort presents the conspicuous fruit of the harvest of all the weighing and measuring hitherto accomplished with reference to the ocean. Drawing their materials from the scientific reports that have resulted from successive oceanic expeditions, and in particular from observations made on board the *Michael Sars* in the North Atlantic Ocean, and from the discussions which these facts of observation have received at the hands of oceanographers, biologists, physicists, geologists, and mathematicians, these authors have supplied students of oceanography with the first adequate compendium in the English language.

Sub-Oceanic Physiography.—Sufficiently numerous and precise soundings of the ocean have been completed by the respective governments, including that of Monaco, and through surveys by the companies operating submarine telegraph cables to enable us by the aid of isobathic contours to represent with approximate accuracy the varied features of the ocean bed from the margin of the land to depths of over 1,000 fathoms; just as by means of contour

lines leveled with the theodolite or spirit-level on the land itself, we are able to portray the physical features of the emergent areas. It is thus that a new branch of oceanographical science, under the name of sub-oceanic physiography, has been founded largely through the labors of Hull and Spencer, who have, during the year, published a work upon this subject, with the aim of reflecting the erstwhile distributions of land and water and their effects upon the climate of the earth, irrespective of all extraterrestrial agencies. The Australian Antarctic Expedition is now conducting an oceanographical survey between Australia and Wilkes Land which is expected to indicate whether continental connections have in the past existed between Australia and the Antarctic Continent.

Ocean Temperatures near Icebergs.—In the light of Petterson's investigations of the influence of ice on oceanic circulation, measurements of the temperature gradient in the approaches to icebergs in the ocean have been made on board the U. S. S. *Birmingham* and *Chester* by means of the microthermometer, with the object of discovering such characteristics in the changes of temperature as would afford an indication of the approach of a vessel to an unseen mass of ice. (See also XXVI, *Physics*.)

Currents.—From the labors of the many who have observed and investigated the currents of the ocean, the Hydrographic Office has published current sheets in connection with the pilot charts of the several oceans, setting forth the main facts of oceanic circulation in such a manner as to afford information not only of what has been done but also of deficiencies of data.

Evaporation over the Ocean.—Observations of evaporation over the ocean have finally been made. The discussion of them by Lutgens, which is published in the *Annalen der Hydrographie*, shows a daily evaporation of 2.6 mm. in the Atlantic north temperate zone, 6.6 in the northeast trade wind, 3.8 in the equatorial belt of calms, 7.8 in the southeast trade wind, and 1.9 in

the south temperate zone. Apart from the temperature of the air and of the sea itself, the most important factor which appears to affect evaporation from the surface of the ocean is the velocity of the wind. These results are of importance in terrestrial physics, since, on account of the vast expanse of the ocean, the evaporation from its surface determines the rainfall and, to a large extent, the heat transference in the atmosphere.

CARTOGRAPHY

CYRUS C. ADAMS

A selection of the latest maps relating to every part of the world is noted in the *Bulletin* and the Annual Index of the American Geographical Society and in the map lists and index of the *Geographical Journal* of London. The most complete map list published appears in the monthly issues of *Petermann's Mitteilungen*.

Progress of the International Map of the World.—Up to November, 1912, seven sheets of the map of the world on a scale of 1:1,000,000 have been published. They are sheets North K-19 (Boston), New England east of 72 deg. W. and south of 44 deg. N.; North O-25 and O-30, comprising the Highlands of Scotland and the Hebrides; North M-31 (Paris), Northern France, Belgium, Luxemburg, part of Holland, and southeastern England; North K-35 (Constantinople), eastern Bulgaria, and eastern European Turkey; South H-34 (Kenhardt), northwestern Cape of Good Hope; and North L-34 (Budapest), between 18 deg. and 24 deg. E. and 44 deg. and 48 deg. N. Official cartographic establishments in France, Great Britain, Hungary, and the United States have published, Austria, Canada, and Spain are in preparation, and Germany, Australia, Italy, and Russia have not yet taken up the work. Belgium, Bolivia, Bulgaria, Chile, China, Colombia, Norway, Portugal, Siam, and Uruguay expect to cooperate.

For the United States portion of the work, the map is being compiled on the scale of 1:500,000 as a base

map without relief, and is being published in the form of state base maps on that scale. This material on the same scale is also assembled to form sheets of the International Map and has been compiled for sheets North L-15, K-16, K-17, K-18, J-18, I-16, I-18, H-16, H-17, G-17. Relief will be imposed upon this base and will be then reduced to the proper scale of the International Map.

New Maps.—The new maps and map sheets issued every year number several thousands. The following list includes only a few specimen products (see also *Physical Geography of Land Areas, supra*):

NORTH AMERICA

North America.—Geologic Map of North America compiled by the U. S. Geological Survey in coöperation with the Geological Survey of Canada and Instituto Geológico de Mexico under the supervision of Bailey Willis and G. W. Stose. 4 sheets. 1:500,000. (U. S. Geological Survey, 1912.) The second edition of this map, which is the standard in its field. (See also *Dynamic and Structural Geology, supra*.)

Alaska.—Geologic Reconnaissance Map of the Alaska Peninsula. Geology compiled by W. W. Atwood and others. 1:1,000,000. 15 colors. In "Geology and Mineral Resources of Parts of the Alaska Peninsula." (U. S. Geol. Surv., Bull. 467, 1911.) Valuable general geological map of the peninsula on a large scale.

United States.—Geologic Map of the Lake Superior Region with sections. Geology compiled by C. R. Van Hise and C. K. Leith. 1:1,000,000. The fundamental geological map of the ore-bearing region around Lake Superior.

—Three maps of the United States. 1:7,000,000. Compiled by Henry Gannett. (a) Base Map; (b) Contour Map; (c) Relief Map. (U. S. Geol. Surv., Nov., 1911.) These maps have been steadily improved since first issued in 1891.

CENTRAL AMERICA

Central America.—Mapa de America Central. 1:1,000,000. (W. C. Rübsamen, Stuttgart, 1911.) A good wall map; thorough in respect of railroads and roads.

SOUTH AMERICA

Brasil.—Mappa do Estado do Ceará. 1:650,000 (Ministerio da Viação e Obras Publicas, Oct., 1910.) Good large-scale map.

Chile.—Mapa de Chile. Oficina de Mensura di Tierras. Edición Centenaria. 1:500,000. 5 colors. (Santiago, 1910.) Official map of Chile on fairly large scale. The complete map consists of 22 sheets.

AFRICA

Africa.—Showing the progress of Exploration. By F. R. Cana. 1:20,000,000. (*Geogr. Journ.*, Vol. 88, 1911.) Shows excellently the present state of our knowledge of the continent.

—Thirteen rainfall maps of Africa. In *The Climate of the Continent of Africa*, by A. Knox (Cambridge, 1911). Include new material excepting for the extreme S. of Africa.

Eritrea.—Carta dimostrativa della Colonia Eritrea e delle Regioni Adiacenti alla scala di 1:400,000. 5 colors. (Istituto Geografico Militare, Rome, 1909 and 1910.) 14 sheets. The official map of the colony of Eritrea on a fairly large scale.

German East Africa.—The [Duke of Mecklenburg's] Expedition's field of work. By Lieut. M. Weiss. 1:200,000. Accompanies *In the Heart of Africa*, by the Duke of Mecklenburg. (New York, 1910.) New material on the region drained by the Kagera source of the Nile; and the best map of the volcanic region N. of Lake Kivu.

Kamerun-French Congo, etc.—Das Kamerun-Kongo Abkommen zwischen dem deutschen Reich und Frankreich von 4. November, 1911. 1:500,000. (*Pet. Mitt.*, Vol. 57, Dec., 1911.) One of the best examples of boundary maps in Africa; including routes, concessions to commercial enterprises and much other information.

Tripolitania.—Carta della Tripolitania e Cirenaica. 1:500,000. 7 colors. By A. Dardano. (Istituto Geografico di Agostini, Bergamo, 1911.) One of the best maps of Tripoli.

Rhodesia-Nyasaland-Portuguese East Africa, etc.—1:500,000, with paper by A. Sharpe. (*Geogr. Journ.*, Vol. 39, No. 1, 1912.) A critical compilation of the best information on this large region in South Africa.

EUROPE

France.—Carte Aéronautique: Feuille Châlons. 1:200,000. (Service Géographique de l'Armée, Paris, 1911.) One of several sheets of parts of France, marking a decided advance in maps for the use of air navigation.

OCEANIA

Dutch New Guinea.—Part of Dutch New Guinea to illustrate the explorations of Capt. C. G. Rawling and E.

Marshall. British Expedition of 1909-11. 1:250,000. (*Geogr. Journ.*, Vol. 38, 1911.) Extends exploration of axial range of New Guinea to the west of Lorentz's work.

German New Guinea.—Loop der Kelerin Augusta Rivier (Nieuw-Guinea) bij de grens van het Ned. Gebied. 1:1,000,000. (*Tijds. Kon. Nederl. Aardr. Genoot.*, Vol. 28, No. 6, Amsterdam, 1911.) Nearly completes the mapping of the most important navigable river in New Guinea.

Papua.—Map of the Territory of Papua. Latest surveys. 32 miles to an inch. In *Handbook of the Territory of Papua*, compiled by Staniforth Smith (Melbourne, 1909). Large-scale official map of British territory.

POLAR

Arctic Regions.—Discoveries in the Arctic Sea. With additions and changes to 1909 by Capt. Bernier. Mercator's projection. In "Report on the . . . Government Expedition to the Arctic Islands and Hudson Strait . . ." by J. E. Bernier (Ottawa, 1910). Includes routes of Bernier's expeditions of 1906-07 and 1908-09.

—Geological Sketch Map of the Northern Islands of Canada. 1:4,700,000. In "Report on the . . . Government Expedition to the Arctic Islands and Hudson Strait . . ." by J. E. Bernier (Ottawa, 1910). A general geological map of the American Arctic Archipelago.

WORLD

Karte der Grenzen und der Genauigkeit unserer heutigen Kenntnis vom Relief der Erdoberfläche. Entworfen und gezeichnet von Ludwig Carrière. 1:98,000,000. (*Pet. Mitt.*, Vol. 57, Dec., 1911.) Graphic representation of our knowledge of the earth's surface based on a study of detailed map material.

Atlases

The Century Atlas of the World.—Revised and Enlarged. (The Century Co., New York, 1911.) The new edition sustains the reputation of this atlas as one of the most useful for general consultation.

The Citsen's Atlas of the World.—156 pp. of maps and plans. (John Bartholomew & Co., Edinburgh, 1912.) One of the superior products of the leading British map house. The map maintains a high standard of accuracy.

Atlas Universel de Géographie.—(Librairie Hachette et Cie., Paris, 1912.) This notable work, begun a half-century ago, is finally completed. It takes a leading place among the best cartographic products. All the sheets are now to be brought up to date.

EXPLORATION AND DISCOVERY

HENRY GANNETT

Antarctica.—In the YEAR BOOK for 1911 (p. 603) it was noted that Roald Amundsen in the *Fram* had made a landing on the Bay of Whales, near the eastern end of the Ross Barrier, from which an attempt was to be made to reach the South Pole. Early in March the world was electrified by the news that on Dec. 14, 1911, Amundsen, with four companions, reached the desired goal. They traveled with dogs and sledges and seem to have had no special difficulties. The entire distance traversed from their depot on the Bay of Whales to the Pole, about 700 miles, was over a route to the east of that traversed by Shackleton, and so far distant from it as to open a large extent of new territory. More than half the route was due south across the icefield lying upon Ross Sea, practically a dead-level expanse. On reaching the land, they traveled up a glacier, the ascent of which to the summit of the plateau at an altitude of 10,500 ft. they accomplished in the wonderfully short time of four days. The remaining distance of 275 miles was over the ice cap of this plateau, which was undulating and in places hilly, but presented no great difficulties to progress excepting extremely stormy weather. The party spent three days at the Pole and then returned over the same route. The Pole was found to be in an altitude of 10,500 ft., and the highest altitude reached on the journey was but little over 11,000 ft. Probably the most important single discovery made by Captain Amundsen in this extremely prolific journey is that Ross Sea does not extend across the continent of Antarctica, as has been surmised, but that its head is little farther south than his route.

In the YEAR BOOK for 1911 (p. 603) it was noted that Captain R. L. Scott, with the British Antarctic Expedition, had landed his parties at McMurdo Sound, in the neighborhood of the former landings of himself and Sir Ernest Shackleton. Later advices, brought by his ship, the

Terra Nova, in March, are to the effect that Captain Scott started with his party for the long journey to the South Pole on Nov. 2, 1911; that he was in 87 deg. 36 min. south latitude on Jan. 4, 1912, 150 miles from the Pole, with an abundance of provisions and every prospect of reaching the Pole. It is evident, however, that, while there is every probability that Captain Scott reached the Pole, he was preceded by Amundsen by a month or more.

Reports have been received from the Australian Antarctic Expedition of Dr. D. Mawson. Dr. Mawson himself landed a party of 14 at Point Alden, in the eastern part of Adelie Land, and a second party, under Mr. Wild, landed about 1,200 miles to the westward of Dr. Mawson's station, on the land which was discovered by Captain Wilkes and by him named "Termination Land." It is gratifying to us to know that the discoveries of the *Aurora*, Dr. Mawson's ship, and the landings of these two parties fully confirm the heretofore discredited discoveries of Captain Wilkes, made more than 70 years ago.

Advices received from the German Antarctic Expedition appear to indicate that a landing has been obtained somewhere on the shore of Coates Land.

The Japanese Antarctic Expedition, after making a landing at the Bay of Whales, and making a couple of short sledge journeys, gave up the expedition and returned to Japan.

The Ascent of Mt. McKinley.—Prof. Herschel C. Parker started from Seattle, Wash., on Jan. 24, for the town of Seward, Alaska, with the intention of crossing overland with dogs and sledges to Susitna Station and making an attempt to climb Mt. McKinley from this point. Advices were received late in the summer to the effect that he had succeeded in reaching a point within 200 ft. of the summit, but could get no farther.

Alaskan Glaciers.—Under the auspices of the National Geographic Society, Professors Tarr and Martin spent the past summer in the study of the glaciers of the Kenai Pen-

insula, the Copper River, southeast Alaska, and numerous other localities.

Canada.—Messrs. H. V. Radford and T. G. Street have made a notable journey of 325 miles from Great Slave Lake to Artillery Lake, in the course of which they have made many corrections in the maps of that little-known region.

Nova Zembla.—Three different expeditions to this group of islands have been sent out by Russia in the past year, which have made very valuable topographic observations and rich botanical and geological collections.

Russia.—The Russian geologist, O. O. Baklund, has made an examination of the little-known northern extremity of the Ural Range.

B. M. Shitkof has carried out a very important exploration in the Samoyede Peninsula, between the Kara Sea and the Gulf of Ob, Siberia, the interior of which has hitherto been almost unknown.

Peru.—The American Expedition, under Prof. Hiram Bingham, which is noted in the *YEAR BOOK* for 1911 (pp. 604, 666), returned to this country late in that year after meeting with complete success. Another expedition, under the same management, was organized and set forth during the past summer for the purpose of extending the area of those explorations, especially on the eastern slope of the Andes. (See XXVIII, *Anthropology and Ethnology*.)

Africa.—French military reconnaissances in the Sahara south of Morocco have been carried on actively in recent years. In 1904-5, Captain Flye-Sainte-Marie led an expedition into the region lying south and southwest of the oasis of Tuat in order to put an end to the depredations of the tribesmen of southern Morocco upon caravans on the route from Morocco to Timbuktu. Recently Captain Cancel has carried on a similar expedition in the region lying north of Captain Flye-Sainte-Marie's expedition, and has extended greatly our knowledge of this region, which was hitherto practically unexplored. Several hitherto unknown springs and oases were discovered which will help the caravan trade. Upon

the maps the distinction has been made between sand and stony deserts, and the sand dunes of Erg Igidi and Erg Shesh, the two principal sand deserts of the western Sahara, have been depicted. Positions were determined astronomically and meteorological records were kept.

The boundary between Liberia and the Ivory Coast has been defined by treaty signed at Paris on Jan. 13, 1911, and the boundary is now being delimited.

With three parties the Duke of Mecklenburg has been exploring Central Africa. The first party explored the region about Lake Chad and south thereof to Bagirmi. The second party worked in the southern part of the Cameroons, and the third in the region of the upper Ubangi and the upper Nile.

Dr. E. E. Kirschstein has undertaken an expedition to study the structure of the two great rift valleys of eastern Africa.

Dr. Hans Meyer's East African Expedition has explored a region lying west of the Victoria Nyanza, including Ruanda and the Kirunga volcanoes. He started from the German port of Bukola, on the west coast of Victoria Nyanza, going westward to Lake Ikimba. The shape of this lake was found to be considerably altered since earlier surveys of it were made. Thence the party traversed eastern Ruanda, an almost treeless country, made up of long regular ridges separated by swampy valleys. Thence they went to the Kirunga volcanoes, a semi-circular range of mountains rising in Mt. Kabuji to an altitude of 8,530 ft. Dr. Meyer found one of the volcanoes, Niragongo, in a state of eruption. Thence going south to Tanganyika, the expedition passed through an unexplored region to the southwest of Isawi and the Muvisi Range.

The Swiss explorer, Montandon, has recently completed extensive explorations in the southern part of Abyssinia, and, besides the map of his route, the expedition contributes to the knowledge of physical geography, ethnology, and linguistics.

Asia.—Dr. Legendre has been making extensive journeys in western

China, which have resulted in many valuable discoveries and the preparation of maps of large unknown areas.

Prof. Machatschek has traveled in Turkestan over Tashkent, up the Chirchik River to Khojaket, where it emerges from the western foothills of the Tian Shano. He traveled along their base in a southerly direction to Khojent on the Syr Darya; thence he went east along the southern border of the Chaktal Tau, where the larger mountain streams emerge upon the arid plains. Subsequently he followed the post road northward to Chimkent; thence northeast up the headwaters of the Sryss River to where the Kara Tau joins the main range of the Ala Tau. On his return to Tashkent he followed a more easterly route. Still later he started on the third expedition to explore the main range of the Chaktal Tau.

Barclay Raum Kier, a Danish explorer, has recently completed an extensive journey in eastern Arabia. He traveled from Aleppo via Bagdad to Basra; thence to Koweit; from that point he went south to Reid in the Wahabi country; and thence eastward to the Persian Gulf, passing through the Hohuf Oasis.

Borneo.—An extensive journey has been made in central Borneo by A. S. Douglas, Resident of Baram Sarawak, from Claudetown. The route lay up the Baram River and its tributary the Tutan. He passed over the Pemabo range and thence returned *via* the Baram River.

New Guinea.—The work of exploring this great island is going forward steadily and rapidly (see *AMERICAN YEAR BOOK*, 1911, p. 605). Among others Captain K. F. Koch, of the Dutch Army, has been exploring the peninsular region in the west. From Argoeni Bay on the south coast he crossed over hills and swampy districts to MacCluer Gulf, which he reached near its eastern end near Marenas; thence he crossed the narrow isthmus lying between MacCluer Gulf and Geelvink Bay, reaching the latter at Windesi; thence he examined Wandammen Bay, an arm of Geelvink Bay, and returned across the isthmus to the south of his previous route.

XXVI. CHEMISTRY AND PHYSICS

CHEMISTRY

INORGANIC AND PHYSICAL CHEMISTRY

ARTHUR WESLEY BROWNE

Water.—On the assumption that water is substantially a solution of ice in hydrol, J. Duclaux and E. Wollman have investigated the effect upon the color of a column of water six metres long illuminated by transmitted light, of changing the temperature of the water, or of adding colorless salts. They conclude that the ice molecules present are characterized by a blue or purplish blue color, while the hydrol molecules are greenish yellow or green. The behavior of water and of ice under pressure has been studied by P. W. Bridgman, who finds that, like water, ice shows abnormal behavior under certain conditions, appearing in as many as five distinct forms (AMERICAN YEAR BOOK, 1911, p. 606), all of which, except ordinary ice, are heavier than water.

Hydrogen Peroxide and Ozone.—The formation of hydrogen peroxide by means of the electric discharge at a temperature several degrees below zero, and at pressures from 30 mm. to 760 mm. has been investigated by A. Besson. When the discharge was passed through water vapor alone no peroxide was formed. With water vapor and oxygen it was always obtained except at very low pressures. With water vapor and air the results were rather less satisfactory. The author concludes that the necessary conditions prevail in the atmosphere at high altitudes, and believes that the appearance of hydrogen peroxide in rain water is attributable to electrical influences. F. Fischer and M. Wolf have found it possible to pre-

pare hydrogen peroxide of very high percentage strength by subjecting appropriate mixtures of hydrogen and oxygen to the action of the silent electric discharge. With the aid of liquid air a product containing 87 per cent. of hydrogen peroxide was obtained. The use of the silent electric discharge in effecting the formation of hydrogen peroxide had been previously suggested by A. de Hempinne. A most interesting study of certain derivatives of hydrogen peroxide has been made by J. D'Ans and W. Friederich from the viewpoint of the analogy between hydrogen peroxide and water. By the action of 100 per cent. hydrogen peroxide upon acid chlorides these investigators obtained peroxides or peracids, and hydrogen chloride. This action is very similar to hydrolysis, and might be termed "hydroperoxolysis." When metallic sodium was brought into contact with 100 per cent. hydrogen peroxide, hydrogen was liberated and a sodium hydroperoxide of the formula $2\text{NaO}_2\cdot\text{H}_2\text{O}_2$, analogous to a hydrated sodium hydroxide, was formed.

By repeated fractionation at low temperatures of ozone prepared with the aid of a Siemens and Halske ozonizer, C. Harries obtained an 80 per cent. pure ozone. From his analytical results he is led to believe that the last fraction contained a new aggregate of oxygen atoms, for which the formula O_8 and the name "oxozone" are suggested. Harries has moreover ascribed the so-called catalytic decomposition of ozone by sodium hydroxide or by sulphuric acid, to the action of this hitherto unrecognized constituent of ozone. In a later article he adduces evidence

tending to show that ordinary O_3 to 14 per cent. ozone probably contains as much as one-third of its amount of oxozone. W. Traube has studied the action of ozone upon the alkali hydroxides, as the result of which a mixture of unchanged hydroxide, potassium ozonate, and potassium tetroxide was obtained. The yellowish-red potassium ozonate, which itself gives no hydrogen peroxide on treatment with water, was found to change gradually into potassium tetroxide which with water liberates hydrogen peroxide and oxygen gas in approximately equimolecular proportions.

Potassium Oxanate and Oxane.—By treating potassium cyanate, KCNO , with hydrogen peroxide in neutral solution, A. P. Lidoff seems to have succeeded in preparing potassium oxanate, K_2CNO_2 , together with oxane, CNO , a gas somewhat lighter than carbon dioxide (see also *Organic Chemistry, infra*). He obtained potassium oxanate also by heating potassium cyanate with copper oxide, or by effecting its combustion in oxygen, and has, moreover, prepared the sodium, potassium, lithium, calcium, barium, lead, and copper oxanates. Evidence of the existence of an oxidation product of oxane, for which the name "peroxane" is suggested, and of an isomer of oxane, named beta-oxane, ONC , has also been obtained.

Photochemistry and Actinochemistry.—Stocklassa and Zdobnický have continued their study of the synthesis of sugar by the action of ultra-violet rays upon potassium bicarbonate and nascent hydrogen, in absence of chlorophyll. Applying their results to the question of assimilation in the plant, they deem it possible that potassium bicarbonate in the moment of formation, rather than carbon dioxide, is reduced by nascent hydrogen in the chlorophyll cell. Light may be used not only in chemical synthesis, but also in chemical analysis, at least in the opinion of M. Landau, who has employed ultra-violet light as an aid in the analysis of a mixture of gases containing hydrogen, ethane, and ethylene. He recommends that the ethylene be removed first (in ab-

sence of oxygen) by a process of photopolymerization. The contraction is then noted, oxygen is added, and the hydrogen and methane are determined by photocombustion. C. Winther has devised an electric photoaccumulator based upon the fact that mercuric chloride and ferrous chloride in aqueous solution react under the influence of ultra-violet light to form mercurous chloride and ferric chloride, and that these substances under suitable conditions react quantitatively in the opposite direction. By this process it was found possible to recover as electrical energy the light energy absorbed during the first reaction. Matuschek and Nenning have found that such chemical reactions as the solution of metals in acids, the formation of hydroxides, the action of water upon calcium carbide, the formation of ammonium amalgam, the hardening of cement, and the setting of plaster of Paris, when caused to take place in a glass beaker with a tin-foil star on the bottom, in the dark, above a photographic plate, produced an image of the star. The authors conclude that "in every chemical process light waves are set up; in fact, all occurrences in which temperature changes take place are accompanied by optical activity." E. Schneckenberg is inclined to believe, however, that these results are attributable to the action of heat rather than light rays. A number of contributions to the theoretical and to the experimental side of photochemistry have been made by W. D. Bancroft, J. H. Mathews, and their respective co-workers, and by others, in connection with the Eighth International Congress of Applied Chemistry.

Emission of Electrons During Chemical Reactions.—Haber and Just have shown that chemical reactions between alloys or amalgams of the alkali metals and gases which readily act upon them are accompanied by the liberation of negatively charged electrons. For example, during the reaction between carbonyl chloride and an alloy of sodium with calcium, a swarm of electrons with a velocity about one hundredth that of light was given off by the alloy. The nature of the particles was determined

by their behavior in the electric and magnetic fields, and the ratio of charge to mass was determined by the method of J. J. Thomson. No positively charged particles were emitted. The possible function of interatomic electrons in catalysis and in electrolysis has been discussed by P. Achalme.

Positive Ions.—The emission of positive thermions from salts of the alkaline earth metals has been investigated by C. J. Davisson. The values of e/m for barium sulphate, phosphate, fluoride, and chloride showed considerable variation. Several salts of strontium, calcium, and magnesium have also been studied. The conclusion is drawn that the positive thermions are single atoms of the elements in question, minus electronic charges. The mobility of the positive ions produced during the oxidation of copper has been determined by A. Campette, whose results indicate that large ions, comparable with those produced by the slow oxidation of phosphorus, are given off. Reboul and de Bollement ascribe the emission of positive charges by heated metals under certain conditions to the little explosions produced on the metallic surface by the liberation of occluded gases.

Continuing his important researches upon the conduction of electricity through gases (*AMERICAN YEAR BOOK*, 1911, p. 635), J. J. Thomson has obtained lines which indicate in a preliminary way the existence of H_2 , N_2 , H_2O , and CS_2 . (See also *Physics*, *infra*.)

Radioactive Substances.—The molecular weight of thorium emanation has been determined by May S. Leslie, with the aid of an apparatus of the type used by Debierne in his work with niton. Comparison of the rates of diffusion of thorium emanation and oxygen showed the molecular weight of the former to be in the neighborhood of 200. Herschfinkel has attempted to prepare metallic radium by the method of Ebler (*AMERICAN YEAR BOOK*, 1911, p. 609), but concludes that RaN , probably cannot be prepared, as the radiations would decompose it as soon as formed. Ebler and Fellner suggest that radioactive substances may

be concentrated and isolated by fractional absorption. The spontaneous union of metallic radium with nitrogen at ordinary temperatures is regarded by Ebler as an illustration of "autonitridation," analogous to the well-known processes of autoxidation. W. Ramsay has again investigated the possible formation of neon as a product of radioactive change. The gases evolved during the treatment of an aqueous solution of thorium nitrate with niton over a period of two years were found to contain both helium and neon. On the basis of this confirmation of his earlier experiments Ramsay reiterates the statement made four years ago, to the effect that neon is either a product of the degradation of niton, or else is produced by its action upon water. Further confirmation of this view seems to be afforded by the results obtained on analysis of the radioactive gas issuing from the King's Well at Bath. This gas contains three-fourths as much argon, 188 times as much neon, and 73 times as much helium, as an equal volume of air. (See also *Physics*, *infra*.)

Apparent Change in Weight During Chemical Reaction.—J. T. Manley has reviewed the work of Landolt, who, claiming an accuracy of ± 0.03 mg., found the mean apparent change in mass during chemical reaction to be not greater than 1 in 1×10^4 . With the aid of additional devices and precautions that permitted an accuracy of ± 0.006 mg., Manley fully investigated the reaction between barium chloride and sodium sulphate, reaching the conclusion that the apparent change in mass was not greater than 1 in 1×10^4 .

Nitrogen.—By passing dry nitric oxide into liquid oxygen or liquid air, greenish flocks of nitrogen hexoxide, said to have the formula NO_6 , have been obtained by F. Raschig. The alleged new oxide, the formula for which has already been questioned by E. Müller, is said to be very unstable, decomposing at temperatures slightly above the boiling point of oxygen. The formation of certain metallic nitrides by the action of metals upon sulphocyanates and upon cyanides has been described by A. C.

Vournasos. The rate at which magnesium undergoes oxidation and nitridation has been studied by Matignon and Lassieur, who find that at 670 deg. oxidation is 1,000 times as rapid as nitridation. F. Ephraïm has compared the dissociation temperatures of a series of ammonates of the general type $\text{Me}^n\text{Cl}_n \cdot 6\text{NH}_3$, while W. Peters has investigated the ammonates of 120 different salts from the viewpoint of Werner's theory of valence. A. Besson seems to have obtained hydrazine by the action of the silent electric discharge upon dry mixtures of nitrogen and hydrogen. When the gases were moist, hydroxylamine was obtained. By the action of hydronitric acid upon cyanogen, Mandala and Passalacqua have prepared cyanotetrazole. Sodium trinitride and cyanogen bromide have been found by Darzens to yield cyanogen trinitride, a carbon pernitride, with the formula, NC_3N_3 . The suggestion that hydronitric acid and its derivatives may possess a chain, instead of a ring, structure has been made independently by three investigators, A. Angeli, J. Thiele, and J. W. Turrentine.

Active Nitrogen.—R. J. Strutt has continued his interesting researches on monatomic nitrogen (*AMERICAN YEAR BOOK*, 1911, p. 608). The energy of active nitrogen was found to be of the same order of magnitude as that of other substances. During the spontaneous reversion of active to ordinary nitrogen, a process that takes place more rapidly at low than at higher temperatures, ionization of a small proportion of the atoms was found to take place.

Active Hydrogen.—During a study of the behavior of the tungsten lamp, I. Langmuir has found that when a tungsten wire is heated in hydrogen at very low pressures, the hydrogen slowly disappears, being deposited, especially at the temperature of liquid air, upon the glass. When phosphorus is present in the bulb, a direct synthesis of phosphine is effected. These facts are explained on the ground that hydrogen dissolves, in the atomic condition, in the metal wire, and that some of the atoms ultimately leave the wire, remaining in the atomic condition at the low

pressure, and retaining the chemical activity of nascent hydrogen.

Solubility Determinations.—Sieverts and his co-workers have continued their investigations (*AMERICAN YEAR BOOK*, 1910, p. 590) upon the solubility of hydrogen in metals. Among the metals chosen were copper, iron, nickel, tantalum, tungsten, platinum, and rhodium. The effect of salts upon the solubility of other salts has been made the subject of a series of notable investigations by A. A. Noyes and his associates.

Nonaqueous Solutions.—D. McIntosh has called attention to the properties of liquid hydrogen bromide as a solvent. It is without solvent action on inorganic salts, but dissolves many organic compounds, some of which yield conducting solutions. The electrical conductivity of alcohols in liquid hydrogen chloride has been studied by E. H. Archibald. Walden has investigated formamide as an ionizing solvent (*AMERICAN YEAR BOOK*, 1910, p. 590), while J. B. Garner, and Schlesinger and Calvert have worked with anhydrous formic acid. Bagster and Steele have electrolyzed several iodides in liquid sulphur dioxide. O. L. Barneby has carried out a number of reactions of the rare earths in nonaqueous solvents, chiefly acetone. C. A. Kraus has called attention to the close relationship existing between metallic and electrolytic conduction, basing his belief upon experiments with solutions of metallic sodium in ammonia. The behavior of the hydronitrogens in liquid ammonia has been studied by T. W. B. Welsh and by A. E. Houlehan.

Compounds of the Halogen Elements.—Ruff and his associates have investigated a number of metallic halides, including the uranium, tantalum, and columbium fluorides, and the vanadium bromides and fluorides. L. Wöhler has prepared several new halides of platinum. W. Prandtl and Mautz have studied the action of calcium fluoride upon vanadium pentoxide, obtaining a mixture of vanadium oxyfluorides. The iodine oxides of the supposed formulas, I_2O_3 and I_2O_5 , have been shown by H. Kappeler to be simply basic iodine iodate, with the formula I_2O_4 .

Platinum Metals.—W. Crookes has shown that the metals of the platinum group are not, as has previously been supposed, entirely resistant to heat at temperatures below their melting point. Heated for two hours each at 1,300 deg. in the electric furnace, platinum lost on the average over 0.016 per cent., palladium about 0.048 per cent., iridium 0.663 per cent., and rhodium less than 0.009 per cent. In four two-hour periods ruthenium lost 25 per cent. of its weight. From this work it is apparent that platinum crucibles can no longer be absolutely depended upon in accurate work at high temperatures. A. G. French claims to have discovered a new element, probably of the platinum group, in a mine yielding platinum, iridium, palladium, rhodium, and osmium. It dissolves in nitric acid, in hydrochloric acid, and in aqua regia, yielding no residue. The supposed new element is named "canadium," and is believed to belong between molybdenum and ruthenium in the periodic system.

Miscellaneous.—The separation of erbium into two alleged new elements has been announced by A. von Welsbach. An extensive series of researches upon the asymmetric cobalt atom has been carried out by A. Werner, who has also prepared stereoisomeric cobalt and chromium compounds. The stereoisomerism of platinum has been studied by H. Kirmreuther, and the polymorphism of nickel by A. Baikov. It has been found by V. Ipat'ev that certain metals may be deposited from aqueous solutions of their salts by hydrogen at high temperatures and pressures. A. C. Vournasos found that by heating potassium bismuthide in hydrogen to about 400 deg., the gas was absorbed, yielding a pyrophoric material. At 700 deg. the potassium was volatilized, the bismuth remaining in combination with hydrogen. The method is said to be suitable for use in the preparation of hydrides of other metals.

ORGANIC CHEMISTRY

J. M. NELSON

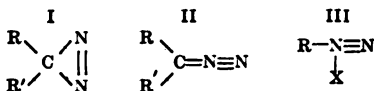
Oxane.—Two new organic compounds, oxane, CNO, and mono-cyan.

CN, have been recently discovered by the Russian chemist Lidoff (*Pro. Eighth Int. Cong. Ap. Chem.*, 1912, Vol. VI, p. 185). They are of particular interest, because of the close analogy existing between them and the two well-known oxygen carbon compounds, carbon dioxide and carbon monoxide. They not only have similar chemical constitutions, but also show many similar physical and chemical properties. Among these may be mentioned the ability of oxane to form salts with alkalis corresponding to the carbonates and percarbonates. Due to this close relationship, it is not surprising to find in reactions such as the quantitative estimation of urea by means of alkali hypobromites, the possibility of the formation of some oxane, introducing an error in the analysis, since a correspondingly low amount of nitrogen would be formed. Oxane, however, yields a liquid and a solid polymers, and is also capable of existing in an isomeric form, β oxane, properties which so far have not been observed in the case of carbon dioxide.

A New System of Acids, Bases and Salts.—Franklin (*Pro. Eighth Int. Cong. Ap. Chem.*, 1912, Vol. VI, p. 119; *Am. Chem. Jour.*, Vol. XLVII, 1912, p. 285) has proposed a new system of acids, bases and salts in which ammonia occupies a position strictly analogous to that occupied by water in the oxygen acids, bases and salts. In order to have a distinctive nomenclature for each of the two series of compounds, the ammonia compounds have been given the prefix *ammono* and the oxygen series the prefix *aquo*. To illustrate this relationship between the two systems a little more clearly, we may take this example: in ammono-acetic acid (acetamide CH_3CONH_2) the NH_2 group plays the same part as the OH group does in aquo-, or ordinary, acetic acid, CH_3COOH . The liquid ammonia solutions of the *ammono* compounds exhibit a striking analogy in chemical behavior with the water solutions of the *aquo* compounds. The reaction $\text{CH}_3\text{CONH}_2 + \text{KNH}_2 = \text{CH}_3\text{CONHK} + \text{NH}_3$ is similar to the reaction between acetic acid and potassium hydroxide in an aqueous solution, and phenolphthalein can be

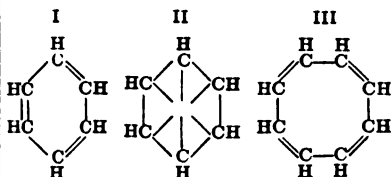
used as an indicator for both of these reactions. Likewise the ammoniac acids in their liquid ammonia solutions attack metals with the evolution of hydrogen and show electrical conductance, while their alkali salts yield esters when treated with alkyl halides in exactly the same way as the *aquo* acids do in their water solutions.

Aliphatic Diazo-Compounds.—The diazo-compounds in the aliphatic series have up to the present been given a ring structure (I below), which puts them into a class of compounds quite different from those in the aromatic series. Thiele (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLIV, 1911, p. 2522), a German chemist, has suggested a new formula II, which resembles more closely that of the aromatic diazonium compounds III, in that both formulae contain the pentavalent nitrogen. This idea of closer relationship between the chemical constitution of the two series, seems also to be more in accord with the similarity in chemical properties.



Cyclo-Octatetraene.—There has probably been no organic compound whose chemical constitution has received more attention than that of benzene. The first structural formula (I) suggested for this compound was that of Kekulé in 1865. One of the chief objections to this formula was that it contained three double bonds, and benzene behaves as though none were present. This led to the proposal of other constitutional formulae such as the concentric formula (II) of Baeyer and Armstrong. The latter, however, necessitated an assumption concerning the valence of carbon quite foreign to the general idea of this property. In recent years Thiele has put forth his theory of "partial valence." According to this, if the structure of benzene does contain three double bonds, as indicated by the Kekulé formula, they should be inactive chemically. Thus this formula again came into favor

and everything concerning the structure of benzene has been quite satisfactory until within the last year, when Willstätter and Waser (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLIV, 1911, p. 3428) succeeded in preparing the interesting compound cyclo-octatetraene III. This has a chemical constitution differing from benzene only in having one more set of doubly linked carbon atoms. If the explanation, based on the theory of partial valence, for the abnormal behavior of the unsaturated groups in benzene is correct, then it would be natural to suppose cyclo-octatetraene would also have inactive double bonds. This is, however, not the case. It behaves entirely differently from benzene. The double bonds are reactive, as is shown by the ease with which they add bromine and decolorize a solution of potassium permanganate. For this reason many chemists have again forsaken the Kekulé formula and turned once more to the concentric, while others are still hoping to find some new explanation which will still permit the use of partial valence for accounting for the behavior of benzene.



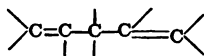
Carbohydrates.—Fischer and Zach (*Berichte der deutschen Chemischen Gesellschaft*, Vol. XLV, 1912, pp. 456, 2068) have prepared an anhydride of glucose. This substance has the same empirical formula, $\text{C}_6\text{H}_{10}\text{O}_5$, as the polysaccharides like starch and cellulose, but differs from them in being a simple sugar or monosaccharide. Its chief importance is of a theoretical nature, in that it might cast some light on the chemical constitution of the carbohydrates in general.

Starch exists in many modifications, which differ to such a degree that they have been regarded as distinct chemical individuals. Among

these might be mentioned soluble starch, α -amylase, amylopectin, and several others. Some are soluble in water, others are insoluble, some are acted upon by alkali and others are not. Furthermore, soluble starch separates from its solution on standing and cannot be brought back into solution. This reaction Maquenne calls "retro-gradation" and the insoluble product "artificial starch." Starch has always been regarded as colloidal in nature, and Herstein (*Pro. Eighth Int. Cong. Ap. Chem.*, 1912, Vol. XIII, p. 177) offers the suggestion that all the various modifications of starch be grouped under the generic classification of "modified starch," and explaining the differences between these products as physical instead of chemical in character. Malfitano and Moschkoff (*Bulletin de la Société Chimique* (iv), Vol. XI, 1912, p. 606) consider that starch and water never form a true solution, but always a hydrogel or a hydrosol, and the ratio between the larger and minute particles of starch varies directly with the amount of water, degree of temperature, and length of time in heating of the solution.

Fats.—One of the chief differences between a vegetable or animal oil and a fat lies in the relative amounts of olein and stearin they contain. Olein differs physically from stearin in being a liquid while the latter is a solid, and chemically in having an unsaturated group or double bond between two carbon atoms, while the stearin has two additional hydrogen atoms, and therefore no doubly bonded carbon atoms, and is saturated. Thus it is readily seen that the conversion of an oil into a fat consists in changing the olein into stearin by saturating it with hydrogen. This has lately been carried out on a commercial scale by treating oils with hydrogen in the presence of finely divided metals, such as nickel, copper, and palladium. The success of this process has evoked considerable study on the part of various investigators to determine the mechanism of the reaction. Wieland (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLV, 1912, p. 484) finds that the activation of the hy-

drogen by means of finely divided metals so that addition takes place, is not due to the production of nascent or atomic hydrogen, but more probably to the formation of a metal hydrogen compound, which additively reacts with the unsaturated substance like olein and from which the metal subsequently splits off. Furthermore, the temperature under which the reaction takes place is very important, since when it is too high, hydrogen is split off instead of added. Paal (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLV, 1912, p. 484) finds that partial reduction can be effected in compounds where more than one set of doubly bonded carbon atoms occur, provided they have at least one carbon atom between the two sets, as indicated by the expression:



Skita and others find that there is a great difference in efficiency among the various metals used for this purpose. Palladium seems to be about a thousand times more active than nickel, but since it is about a thousand times more costly, it has no great advantage after all.

Besides the hydrogenation of oils, this reaction has been applied to other classes of compounds. Willstätter (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLV, 1912, p. 1471) has reduced several substances belonging to the aromatic series, and Skita (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. XLIV, 1911, p. 2866) has applied it to the reduction of alkaloids.

Tannins.—Because of the rôle the tannins play in the industries, it has been very important to ascertain their true chemical nature, so that the process of tanning can be placed upon a more scientific basis instead of upon a rule of thumb method. Nierenstein (*AMERICAN YEAB BOOK*, 1911, p. 612) came to the conclusion that tannin was a mixture of leucotannin and digallic acid. Within the past year (*Annalen der Chemie*, Vol. 388, 1912, p. 223) he has found this conclusion to be incorrect. Fischer and Freudenberg (*Berichte der*

Deutschen Chemischen Gesellschaft, Vol. 45, 1912, p. 915) have recently carried out an investigation which led them to the discovery that the particular tannin with which they were dealing was made up of one molecule of glucose to five molecules of gallic acid. From this information they have synthesized a substance containing this proportion of glucose to gallic acid and found it to possess all the properties of a tannin. The chief criticism against this work was that they did not know the original source of the tannin they investigated. This point is of importance, since various natural products are used for the production of tannin, and it has been an open question whether all sources yield the same substance. Fortunately Feist (*Berichte der Deutschen Chemischen Gesellschaft*, Vol. 45, 1912, p. 1493) has studied this particular side of the question and has found that the tannin from Turkish gall nuts, Chinese gall nuts, and tannin levisium purissimum Schering all contain glucose combined with gallic acid. These results are regarded as confirmation of the theory of Fischer and Freudenberg on the chemical constitution of tannin in general.

Many other important researches in organic chemistry which have been under way for several years still require more time before they can be brought to definite conclusions. Among them may be mentioned the determination of the chemical constitution of various important natural substances, such as the coloring matter in plants, by Willstätter, Marchlewski, and Hans Fischer; morphine, by Knorr and Pschorr; strychnine, by Leuchs; and cholesterol, by Windaus and Diels.

Bibliography.—The important books published during the year include: A. F. Holleman's *Lehrbuch der Organischen Chemie*, 9th edition; Carl Schwalbe's *Die Chemie der Cellulose*; Schmidt's *Alkaloid-Chemie in den Jahren 1907-1911*; Paul Koppelmeier's *Konstitutionserforschung der Wichtigsten Opiumalkaloiden*; Hugo Kauffmann's *Die Valenzlehre*; Fay's *Coal Tar Dyes*; Percy May's *The Chemistry of Synthetic Drugs*; H.

T. Clarke's *A Handbook of Organic Analysis*; and H. Staudinger's *Die Ketene*.

BIOLOGICAL CHEMISTRY

CARL L. ALSBERG

Nitrogenous Metabolism.—Investigation of nitrogenous metabolism characterizes the year. It has been shown, apparently, that a diet containing an adequate supply of salts, protein and energy-supplying constituents (fats, carbohydrates, proteins) is not alone sufficient to secure the normal nutrition of many animals (Stepp, Röhrmann, Osborne and Mendel, Hopkins). On such diets there is a marked distinction between maintenance, repair, and growth (McCollum, Osborne and Mendel), for fully grown animals withstand a restricted diet vastly better than growing ones (Osborne and Mendel). Young rats make no growth. However, the addition of as little milk as 0.25 per cent. of the total food is sufficient to cause normal growth (Hopkins). The explanation may perhaps be found in the investigations of the past decade on scurvy and beri-beri (Eijkman, Gryn, Fraser, Holst, Aron). Beri-beri, as found in the tropics, is believed to attack persons living mainly on polished rice, that is, rice from which the brown outer layer or pericarp has been removed. By feeding the part of the rice thus removed the disease can be cured. The curative agent in the polishings has been found to be a new crystalline nitrogenous base "vitamine" (Funk), occurring also in milk, lime juice, and probably other foods. The beneficial effect of milk, green vegetables, fresh meat, etc., may well be due to the presence in them of vitamine or some similar substance. Minute quantities of these nitrogenous substances are probably essential in the diet of birds, man, and some other animals, though rats can be kept in good condition on a diet containing none of these substances (Osborne and Mendel). This might also explain the results of Holst on experimental scurvy which led him to suggest that a diet consisting chiefly of dried food or food sterilized at the

high temperatures obtaining in canning is not wholesome for long periods. It has, however, been shown that animals can subsist on a diet containing a single protein instead of the mixtures of normal dietaries (Röhmman, Osborne and Mendel). It is even possible for an animal to build new tissue on such a diet with a protein which lacks certain of the aminoacids. It therefore follows that the old mooted question whether the animal organism is able to synthesize aminoacids or not must be answered affirmatively (Osborne and Mendel). This is a synthesis that was formerly believed to be peculiar to plants. The possibility of aminoacid synthesis has also been shown by two other sets of investigations. One series (see AMERICAN YEAR BOOK, 1911, p. 616) has shown the synthesis of aminoacids in the intermediary metabolism, such as the synthesis of alanin in the liver (Felner). The other series has shown that when there is an abundant supply of energy in the diet, ammonium salts as only source of nitrogen can prevent loss of nitrogen (Grafe and Schlaeffer, Abderhalden). These experiments also show that a distinction must be made between repair, maintenance, and growth, and further that nitrogenous and protein metabolism must not be regarded as identical as was the tendency some years ago. These new views have revived the old question whether aminoacids, into which, to a greater or lesser extent, proteins are decomposed in the alimentary canal, pass unchanged into the blood stream or whether they are converted into protein in the wall of the intestines. By new methods (Van Slyke, Folin), it has been shown that they are not converted, but are conveyed by the blood to the tissue cells (Buglia, Van Slyke and Meyer, Folin, Woelfel), which utilize them directly. It is also claimed (Folin) that the formation of urea is probably a general function of cells. (See also *Chemistry of Food and Nutrition, infra.*)

Phosphorus Compounds.—The interest in the food value of the elements of diet has been directed to phosphorus compounds as well as to

nitrogenous ones, largely owing to the growing interest in lipoids, many of which contain phosphorus (see AMERICAN YEAR BOOK, 1911, p. 614). The nutritional value of phosphorus compounds varies greatly, and it may be that for certain animals life is impossible without lipid food (Stepp). However, rats may be kept in good health on a diet containing neither fat nor lipid (Osborne and Mendel). The lipoids, moreover, have assumed added interest since it has been shown that the quantity found in the brain, the blood, and the excreta may change in disease (Funk, Perritz). These changes seem to be connected with certain immuno-reactions, such as the Wassermann reaction for the diagnosis of syphilis (see AMERICAN YEAR BOOK, 1911, p. 680). Progress in the study of the nucleic acids, compounds as important as the lipoids, has been so rapid that structural formulae, based on adequate experimental evidence, have been proposed for the nucleic acid of the thymus gland, and for guanlyic acid from the pancreas (Levene and Jacobs). For plants it has been shown that some of the phosphorus compounds found in seeds are not identical with phytin, as was supposed, for wheat bran seems to contain a more complex substance (Anderson).

Brain.—The greatest advances have been made in the study of the cerebroside, which are substances free from phosphorus. Levene and Jacobs have shown that there are not as many distinct cerebroside as has been supposed; but that at least some of those described as distinct are really optical isomers. The components of cerebroside are the sugar, galactose, a base, and cerebronic acid. The base, sphingosine, was found to be an unsaturated aminoalcohol of high molecular weight (Levene and Jacobs, Thierfelder) and cerebronic acid to be α -hydroxypentacetic acid occurring in both optical isomers (Levene and Jacobs). Lutein, one of the pigments of animal fat, was found by Willstätter and Escher also to be a large carbon complex, $C_{40}H_{56}O_6$, isomeric with xanthophyll found in plants. Moreover, the simple aminoalcohol, amino-

ethyl-alcohol, was obtained from lecin (Trier).

Carbohydrates, Fermentation.—That sugars may be formed *in vitro* from formaldehyde was shown many years ago. One of the oldest hypotheses of the formation of sugar by green plants is that the carbonic acid of the atmosphere is reduced to formaldehyde from which sugar is subsequently formed. The only positive evidence for this hypothesis was that plants were able to use small quantities of formaldehyde. Then Usher and Priestly showed that artificial thin films of chlorophyll formed formaldehyde in sunlight in the presence of carbonic acid and moisture, a thesis they recently defended successfully. This is perhaps the most important biological reduction, since upon it depends most of plant and animal life. Still more recently the theory has been further strengthened by the successful detection of formaldehyde in leaves (Curtius and Frantzen). It has been known for some time that yeast forms the higher alcohols of which fusel oil is composed, not from sugar but from amino acids. Recently, the alcohols corresponding to the amino acids, tyrosine and tryptophane, have been prepared by fermentation. Other fungi, however, may oxidize amino acids further. Yeast also forms alcohols from amines, showing that these are probably stages in the conversion of amino acids into alcohols (F. Ehrlich). Dioxycetone is no longer regarded as a stage in alcoholic fermentation (Slator, Lebedew, Chick). Embden and collaborators by the artificial perfusion of blood through the liver have clarified some of the relations between acetone, glycerine aldehyde, and β -oxybutyric, pyruvic and lactic acids, thereby advancing our knowledge of these carbohydrate degradation products. It is probable that pyruvic acid is a step in the oxidation of glucose and the precursor of lactic acid. It seems to be easily oxidized in the organism (Neukirch and Rona).

Pharmacology.—Noteworthy is the trend away from serum therapy back to pharmacology under the new name "chemotherapy." The activity has been so great that a new jour-

nal, *Zeitschrift für Chemotherapie und Verwandte Gebiete*, has been established. The progress has been largely in the synthesis and testing of new organic compounds of arsenic, selenium, mercury, etc. The most noteworthy results have been the cure of mouse tumors by a selenium-eosin compound (Wassermann), and the treatment of tumors by cholin salts (Werner, Szécsi). (See also XXX, *Pathology and Medicine*.)

Two biochemists of note have died: Waldemar Koch of Chicago, noted for his researches on the chemistry of the nervous system, and Ernst Schulze of Zürich, to whom is due the greater part of what is known of the protein metabolism of plants.

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CHEMISTRY OF FOOD AND NUTRITION

H. C. SHERMAN

Federal Legislation.—Shortly before the adjournment of Congress the Food and Drugs Act was amended to cover the case of fraudulent claims for "patent" medicines by declaring illegal any such "if its package or label shall bear or contain any statement, design, or device regarding the curative or therapeutic effect of such article, or any of the ingredients or substances contained therein, which is false and fraudulent." (See also *Sanitary Chemistry, infra.*)

New Rulings Under Federal Law.—The most important new rulings under the federal law are those forbidding the importation of, or inter-

state commerce in, absinthe or foods greened by the use of copper salts. The latter prohibition was made after experimental investigation by the Referee Board of Consulting Scientific Experts. It was also announced that, pending the report of the Referee Board as to the effect upon health of sulphur dioxide, no objection will be made to traffic in sound and wholesome grains which have been bleached with sulphur dioxide and from which the excess of water has been removed, provided each package is labeled to show that sulphur dioxide has been used.

Prosecutions Under Federal Law.—In the twelve months since the last report for the YEAR BOOK was written, "notices of judgment" recording the decisions of the courts in 581 cases have been published—a much larger number of prosecutions than in any other twelve months since the law went into effect. The very great majority of these judgments were in favor of the Government.

State Legislation.—There has been food legislation in several of the states, especially in the direction of regulating the cold storage of foods and the sale of foods by weight or measure, but space does not permit us to discuss here the laws of individual states. (See also XXX, *Public Health and Hygiene.*)

Commission on Milk Standards.—This commission, composed of representatives from various parts of the United States, was formed for the purpose of drawing up standards for milk suitable for adoption throughout the country. It is hoped that the gradual adoption of the standards proposed by such a commission will lead to a more consistent and adequate sanitary control of the milk supply, and harmonize the requirements as to chemical composition, which at present vary considerably in the different states. The report of this commission, embodying full recommendations for definite standards for the different grades and classes of milk, has been published by the Public Health Service. (See also XXX, *Public Health and Hygiene.*)

Chemistry of the Foodstuffs.—In the pure chemistry of the foodstuffs

perhaps the most important advances of the year have been in the study of the carbohydrate esters, especially those with phosphoric acid studied by Euler, and the continued work of Osborne upon the aminoacid radicals of the proteins.

Chemical Synthesis in Nutrition.—

So many noteworthy investigations in the chemistry of nutrition have been published within the past year that most of them can be noted only by title (see bibliography), mention in the text being limited to a few of the most noteworthy contributions to the problem of the ability of the animal body to synthesize the various protein substances which take part in its nutrition processes, this problem having recently been especially prominent. Osborne and Mendel have published (Carnegie Institution, Publication No. 156, Parts I and II; *Proc. Soc. Exptl. Biol. Med.*, IX, 72; *Jour. Biol. Chem.*, XII, 81-90; *ibid.*, XII, 473; XIII, 233) results upon feeding experiments with isolated foodstuffs, in which it was shown that white rats not only may be maintained but may make normal growth and development upon mixtures of certain pure foodstuffs to which was added a "protein-free milk" powder containing the salts, the sugar, and possibly some unknown constituents of the milk. A preliminary report of experiments still in progress indicates that the peculiar nutritive value of this "protein-free milk" is attributable to its ash constituents. Using this powder with mixtures of pure foodstuffs containing a single protein it was found that certain proteins, such as casein, sufficed both for maintenance and for growth; gliadin as sole protein food sufficed for maintenance but not for growth, probably because of the fact that it contains almost no lysine; when the sole protein was zein (which lacks both lysine and tryptophane) the diet sufficed neither for growth nor for maintenance. A mature rat, on a diet in which gliadin was the only source of nitrogen, gave birth to healthy young, and was able to produce milk for their normal growth and development, indicating that she was able to synthesize nucleoproteins and phosphoproteins

which were completely lacking in her food. Abderbalden reports (*Zeitschr. physiol. Chem.*, LXXVII, 22-58; LXXVIII, 1-27) that he has fed a dog for several weeks on a diet of water, salts, glucose, fatty acids, glycerol, and aminoacids. As the dog maintained his weight it is concluded that he must have synthesized all necessary body constituents from these simple substances. Folin and Denis find (*Jour. Biol. Chem.*, XI, 87, 161) that the aminoacids absorbed during digestion pass unchanged through the intestinal wall and through the liver, and are deposited in the various tissues, particularly the muscles, there to be deaminized or built up into proteins according to circumstances. Graefe and Schläpfer report (*Zeitschr. physiol. Chem.*, LXXVII, 1-21; LXXVIII, 485-570) nitrogen retention and nitrogen equilibrium on feeding a diet in which the only form of nitrogen was ammonium citrate and, partly in view of the fact that Knoop and Embden had reported a synthesis of aminoacid from ammonia in the liver in 1910, they believe that their experimental result was due to the body having synthesized sufficient protein for its needs from the ammonium salt and the abundant carbohydrate of the diet. Another interpretation of their experimental data is, however, that nitrogen equilibrium may not be accepted as an adequate criterion of protein equilibrium. (See also *Biological Chemistry, supra.*)

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SANITARY CHEMISTRY

E. M. CHAMOT

Water Purification.—Improvements in ozone production and the development of more satisfactory methods for the analysis of ozonized air has led to a revival of interest in the ozone systems of water purification. Both from the point of view of efficiency and economy the ozone method seems destined to compare favor-

ably in most localities with the older and better established systems of purification.

Purification by ultraviolet light may be said to have reached a sufficient development to warrant its being classed as an established fact, commercially successful, and worthy of careful consideration in all cases of proposed water improvement. The mercury-vapor lamp with quartz windows yields the best and most dependable results with the least expenditure of electrical energy, but a truly satisfactory form of lamp has not yet been devised for the special purpose of water sterilization. The use of ultraviolet light is limited, however, to clear and substantially colorless waters, and must therefore be restricted to the treatment of waters not befouled or to the effluents from filtration plants: colloids present in the water are especially objectionable. Investigation into the mechanism of the action of the ultraviolet rays in killing bacteria has thus far failed to yield definite results. The probable formation of ozone or hydrogen peroxide has been shown to fail satisfactorily to account for the sterilizing power of these rays.

The use of calcium hypochlorite (bleaching powder) for the purpose of disinfecting water supplies has enormously increased. No opinions unfavorable to its use under proper conditions and adequate supervision have been expressed, but its application to certain classes of waters leads to exceedingly objectionable odors and tastes unless exceptional care is exercised. The bad taste is more often that of chlorine rather than a chlorine organic compound, as formerly supposed. The objectionable taste develops before an odor can be smelled, and, in accordance with the established fact that an odor tasted is more intense than an odor smelled, unusual care must be taken to avoid overtreating; the maximum dose which can be applied must be determined for each individual supply. Attempts to remove the disagreeable taste by treating the water with chemicals such as hyposulphites, etc., although more or less successful, have proved nei-

ther satisfactory nor thoroughly practicable. Avoiding the production of the chlorine taste by careful analytical control of the "bleach" and of the water before and after treatment proves to be the best remedy.

In the bacteriological control of purification plants using bleach it is essential, if the analyst wishes truly dependable results, to make bacteriological examinations of the same sample at intervals of 24, 48, and 72 hours in order that the spores of bacteria may have time to develop, since the "bleach" has little or no effect upon spores, though rapidly killing the vegetative cells. Moreover, under certain conditions not yet understood, the growth of an organism seems to be only temporarily inhibited.

Progress in the removal from water of many types of trades wastes has been made, but in most instances the processes still leave much to be desired and few may be considered as uniformly successful.

Much work has been done in the study of the causes of "red" or rusty water in municipal supplies, a phenomenon especially characteristic of certain types of hot-water systems. The taking up of iron into solution from mains and service pipes appears to be due to a number of causes, gases in solution, an acid property of hot water itself, organic matter, etc. The iron is doubtless carried in the colloidal form and is subject to precipitation and agglutination by any agency thus affecting colloidal bodies. A general remedy for the "red" water trouble has not yet been discovered.

In connection with rapid or "American" methods of water purification a new method known as the "chloride process" is attracting attention. Salt brine is allowed to flow slowly in an electrolytic cell, through the cathode chamber, where it is electrolyzed into sodium hydroxide, and discharged into the water to be purified. The chlorine set free at the anode is passed through iron filings, yielding ferrous and ferric chlorides; these salts are fed into the water already treated with the caustic soda obtained from the cathode chamber. The resulting chem-

ical action causes the formation of gelatinous hydroxides of iron which unite with the organic matter in the water and agglutinate and entangle suspended matter and bacteria. Subsequent sedimentation and filtration yield a water of great purity. The process is a continuous one, and is claimed to be more economical than either the iron-lime or the aluminium sulphate methods. (See also XI, *Public Services*; and XXIII, *Civil Engineering*.)

Fooda.—The chief advance of the year has been in the improvement in analytical chemical methods mainly in (1) the detection and determination of artificial coloring matters, of fruit acids, and of preservatives; (2) the establishment of the normal composition of pure foods long under debate; (3) the fixing of standards and definitions to which so-called "pure foods" shall conform.

Among the products which have recently been satisfactorily "standardized" may be cited gelatines and food materials made therefrom, fruit products, such as jams, jellies, etc., honeys, candies, bonbons, etc., and dried foods in flour form, such as powdered milk, eggs, coffee, etc. A search for the presence of arsenic, lead, tin, zinc, and other heavy metals in foods in which their presence was unsuspected has also received special attention.

It may therefore be asserted that the year closes with well-established, acceptable standards for practically all our foods and food materials, and with recognized "official" methods for their analysis upon which dependence can be placed; but the proper machinery for the enforcement of pure-food laws and a means for their common-sense interpretation in the interest of public health and economy are not yet available. (See also *Chemistry of Food and Nutrition*, *supra*.)

Disinfectants.—An enormous amount of work upon the analysis, testing, and standardization of disinfectants has been done, and it has become an established custom in America to express their germicidal power in terms of the "phenol-coefficient" of the Hygienic Laboratory

of the Public Health and Marine Hospital Service. Practice has shown that every disinfectant should also have its phenol-coefficient in the presence of organic matter also determined and stated upon the label of the container, since with few exceptions the germicidal power of a substance is much less in the presence of much organic matter (see Bull. 83, Hyg. Lab., P. H. & M. H. Serv.). It follows, therefore, that to be a good disinfectant the material must possess a high germicidal power, that it shall remain stable in the presence of organic matter, and possess penetrating power and be soluble in all proportions. It is further desirable that the material be nontoxic, or nearly so, that it have detergent properties, and act as a deodorant. Practically the only class of disinfectants conforming to these requirements are derivatives of coal tar.

Ventilation.—Very little more light has been thrown upon the hypothetical organic toxic substances believed to be present in the air expired from the lungs save to increase the probability of their presence and deleterious effects. The measuring of the efficiency of ventilating must still be in the determination of the temperature and of the quantity of carbon dioxide present, and even more upon that of the moisture. Commercial ozonizers as deodorizers and substitutes for good ventilation have proved of little value. (See also XXX, *Public Health and Hygiene*.)

Sewage Disposal.—Satisfactory systems have been devised for the utilization of gases from septic tanks as fuel. Australian plants successfully obtain 10 h. p. and over by this means.

In sewage disposal by dilution it has been found that when such a volume of sewage is discharged into a stream that, through biological oxidation, the dissolved oxygen in the stream falls to 50 per cent. or less of the theoretical saturation, fish and other aquatic forms of life die, and a nuisance is apt to be created. The factor of safety appears to be to maintain the dissolved oxygen at about 70 per cent. of the theoretical saturation. (See also

XI, *Public Services*; XXIII, *Civil Engineering*; and XXX, *Public Health and Hygiene*.)

Patent Medicines and the Public Health.—The indiscriminate use by the American public of nostrums of unknown composition has long been regarded by sanitarians as a fertile source of chronic disease. The analysis of large numbers of these so-called "medicines," and the publication of the results obtained in their *Journal* at the present time by the American Medical Association, must result in an appreciation of the extent and seriousness of this danger and open the eyes of both physician and layman to the appalling dangers menacing the health of the public and the extent and character of the frauds and swindles perpetrated. (See also *Chemistry of Food and Nutrition*, *supra*.)

AGRICULTURAL CHEMISTRY

WILLIAM H. ROSS

For about three-quarters of a century, and until the past few years, the study of soils and fertilizers in their relation to crop production was dominated by one theory almost to the exclusion of any other. It was assumed that crop production is mainly a matter of the percentage of certain mineral constituents in the soil; that the function of fertilizers is simply to supply these constituents; and that their action is on the plant only and not on the soil. Views advanced within the past few years, which have shown the inadequacy of this theory, have suggested that the study of the soil is a very complex one, and that the use of fertilizers, instead of simply furnishing plant food, influences crop production in many other ways by producing physical and biological, as well as chemical, changes in the soil. Recent activities in soil investigations have furnished ample evidence in support of this so-called "dynamic" theory of soil phenomena (Cameron, *The Soil Solution, the Nutrient Medium for Plant Growth*, Chem. Pub. Co., 1911), and the very marked progress towards its general acceptance in place of the old "static" theory may be characterized as the

most noteworthy incident in connection with agricultural chemistry during the past year.

Soils.—The continued investigations of the organic constituents of soils by Schreiner and his co-workers (Bureau of Soils, Bulletins 80, 83, 87, 88, 89) have led to the isolation and identification of 35 different chemical compounds. In a number of cases an extensive study has been made of their action on plant growth by observing the variation in growth of wheat produced by the addition of the organic compound studied to culture solutions containing varying proportions of potash and phosphate with and without the addition of nitrates. Many of the compounds were found to have a marked beneficial effect. Thus creatinine, when combined with phosphate and potash, gave in solution cultures an increased growth of 36 per cent. on an average over that obtained without the use of creatinine. On the other hand, a few of the compounds which have been isolated from the soil were found to have an injurious effect, of which the most marked in their action are picoline carboxylic acid, and dihydroxystearic acid. The latter was detected in 27 out of 84 samples of soil of varying fertility collected from widely separated districts throughout the United States. Among the soils which were designated as good soils only two contained dihydroxystearic acid, and they were of only moderate productivity. Of the soils which had a record for infertility, the dihydroxystearic acid was found in every case, from which it is concluded that this constituent is either a direct factor in the low productivity of soils or serves as an indicator of conditions which cause soils to become less productive.

The experiments by Sackett (Colorado Agri. Expt. Station, Bulletin 179) on the fixation of atmospheric nitrogen in certain soils of Colorado support the conclusions previously reached by Headen that the remarkable accumulation of nitrates in these soils is due to the activity in the soil of nitrogen-fixing bacteria of a chromogenic type, which give to the soils in which nitrates

have been formed in this way a characteristic dark-brown color. Exception is taken, however, to the theory of the fixation of nitrogen in soils by Stewart and Greaves (Utah Agri. Expt. Station, Bulletin 114), who have shown from a recalculation of the results reported by Headden that the nitrates in the soil vary in the same ratio as the chlorine, and that wherever an accumulation of the former has taken place the latter has also increased during the same period in the same general proportion. This is considered a clear indication that these constituents are not formed independently of each other, but that both have a common origin. (See also XIX, *Agriculture*.)

Fertilizers.—Fertilizer investigations during the past year have in a large measure been directed toward finding new sources of fertilizer salts, particularly potash, with a view toward making this country independent of foreign sources of supply. In the giant kelps of the Pacific Coast a source of potash has been found which gives promise, if properly exploited, of supplying the needs of this country for an indefinite time (Cameron *et al.*, *Fertilizer Resources of the United States*, Sen. Doc. No. 109, 62d Cong.). These seaweeds are able to extract potash from sea water by selective absorption, and contain, when dried, from 25 to 35 per cent. of potassium chloride and about 0.15 per cent. of iodine. During the process of drying, a large part of the salts are exuded on the surface, and thus can be readily extracted. Instead of using the ground kelp directly as a fertilizer, it is thought that for distant shipment it may prove more economical first to burn the kelp either in an open or closed retort, following which the potash salts may be obtained by crystallization of the water extract of the ash. From the mother liquors and insoluble residue there could also be obtained by subsequent treatment iodine and other by-products which may cover in a large measure the cost of separating the potash.

Alunite deposits of considerable extent, containing in the neighbor-

hood of 10 per cent. of potash, have been found in Utah and adjoining states. When the coarsely ground material, which consists of an insoluble double sulphate of potassium and aluminium, is heated to about 700 deg. C. sulphur dioxide is evolved, and the double sulphate is changed into soluble potassium sulphate and alumina. As the percentage of potash in the residue is considerably greater than in kainit, this is considered an important source of potash, at least for local consumption.

That the ordinary mineral fertilizers exercise other functions in the soil in addition simply to furnishing plant food has been shown by the experiments of Schreiner and Skinner (Bureau of Soils, Bulletins 80, 83, 87, 88, 89) on the action of fertilizer salts in overcoming the effects of toxic organic compounds. The results show that while the various fertilizer salts act differently in this regard, each salt is very marked in its action in counteracting the effect of certain toxic compounds (see "Soils," *supra*).

Average crops of cereal grains and straws remove from the soil about two-thirds as much sulphur as phosphorus; grasses remove quite as much of the former as of the latter; while cabbage, turnips, and other heavy sulphur-using crops may remove two or three times as much. Normal soils, however, are relatively poor in total sulphur, and contain in an acre-foot about the same quantity as of phosphorus. It would thus appear, as Hart and Peterson have pointed out (Wisconsin Agri. Expt. Station, Research Bulletin 14), that for permanent and increased production of farm crops such systems of fertilization must be adopted as will supply to the soil from time to time, in addition to the elements now recognized as generally necessary, a sufficient quantity of sulphur to meet the losses sustained by cropping and drainage.

Plant Chemistry.—Considerable attention has recently been given to the stimulation of plants by chemical and physical means, particularly in connection with the artificial ripening of fruits, and to the accompanying changes which take place

during the process of ripening. Vinson (Arizona Agri. Expt. Station, Bulletin 66) has shown that many varieties of dates of sufficient maturity ripen quickly after treatment with various chemicals, of which acetic acid is the best in most cases. They may be treated with the vapor of strong acid, or soaked for a short time in vinegar. Less responsive varieties, as Deglet Noor, yield readily to the vapor of nitrous ether, which is effective in exceedingly small amounts. Deglet Noor dates may also be ripened quickly by heating in a humid atmosphere to a temperature of 45-48 deg. C. for three or four days. By this treatment, however, the cane sugar of the date is almost wholly inverted through the action of the enzyme invertase, which is rendered active at this temperature but which is intracellular and remains combined with the protoplasm in an insoluble form when the date is allowed to ripen naturally or when ripened chemically. In most other varieties of dates when unripe the invertase is in the insoluble intracellular form, but as ripening takes place, even under natural conditions on the tree, the invertase passes into the extracellular form, in which state it is soluble in water and the cane sugar as formed is thereby quickly changed into invert sugar.

By inclosing Japanese persimmons in an atmosphere of carbon dioxide, Gore (Bureau of Chemistry, Bulletin 141) found that the astringency of the fruit entirely disappeared in about three to nine days, depending on the variety, the degree of ripening, and other factors. Lloyd (*Science*, XXXIV, 924) extended the work, and by increasing the pressure of the carbon dioxide to 45 lb. was able to reduce the time of processing to about 15 hours. The astringency of the unripe date and persimmon is due to the presence of tannin in a soluble form. When these fruits are allowed to ripen under natural conditions the tannin combines in the tannin cells with a second colloid to form an insoluble colloidal complex, or tannin mass, whereby the astringency disappears. The effect of treating with carbon dioxide

in the case of the persimmon is to hasten the rate at which this combination takes place without hastening at the same time any of the other processes of ripening. In the methods proposed for the ripening of the date all changes characteristic of ripening take place simultaneously, and are supposed to be brought about as a direct result of the release of previously insoluble intracellular enzymes.

The variation exhibited by plants in their ability to reduce the moisture content of the soil before permanent wilting takes place has been shown by Briggs and Shantz (Bureau of Plant Industry, Bulletin 230) to be much less than has previously been supposed, and is insignificant compared with the range in moisture retentiveness exhibited by different soils. The slight differences which were observed are supposed to be due not to the ability of one variety to exert a greater attractive force upon the soil moisture than another, but to the more perfect root distribution of one variety as compared with another. It follows, therefore, that the property of drought resistance in certain plants cannot be attributed to their ability to gain an additional water supply by exerting a greater force upon the soil moisture.

ELECTROCHEMISTRY

OLIVER P. WATTS

While distinctly new discoveries and novel applications of the principles of electrochemistry will be made from time to time, it is to be expected that the annual progress in an applied science which is approaching the twenty-first birthday of its industrial life will consist of improvements in apparatus and methods of operation, and increase in magnitude of the various industries, rather than in the remarkable discoveries which characterized the childhood and youth of electrochemistry. Its progress during the past year has been of this sober, yet substantial, nature. The broadening scope of electrochemistry is reflected in the growth of the American Electrochemical Society, which averaged

ten new members per month for the first ten months of 1912, and included among its new members not only electrochemists and electrometallurgists, but also representatives of numerous other branches of pure and applied science and the manufacturing industries.

Addition Agents.—In the electro-deposition of metals for plating and refining, it has been observed that the addition of small amounts of certain foreign substances to the electrolyte profoundly modifies the character of the deposit, and the term "addition agent" has been suggested for those substances that improve the deposit. The technical importance of addition agents is illustrated by the Betts' process for refining lead, in which the use of 200 grm. of glue per ton of lead yields a dense and very satisfactory deposit instead of the spangles so characteristic of lead plated out of unmodified solutions. It has been proved that the addition agent is, in many cases, deposited with the metal, yet the same agent which yields an excellent cathode from one salt of a metal may give a poor cathode from many other salts of the same metal. The field for experimental investigation is enormous. Some recent contributions to the literature of this subject are:

WEN, C. Y., and KERN, E. F.—"The Effect of Organic and Inorganic Addition Agents Upon the Electrodeposition of Copper from Electrolytes Containing Arsenic." (*Tr. Amer. Electrochem. Soc.*, 20, 121.)

MATTHEWS, F. C., and OVERMAN, O. R.—"The Effect of Addition Substances in Perchlorate Baths." (*Tr. Amer. Electrochem. Soc.*, 21, 313.)

PERKIN, F. M.—"Action of Organic and Inorganic Substances in the Bath." (*Chem. World*, 1, 118.)

Electrolytic Refining of Metals.—In the electrolytic refining of copper, the most troublesome impurity is arsenic, and it is customary by partial renewals or purification of the electrolyte to keep its arsenic content below a certain value in order to prevent arsenic from plating out along with the copper. In a paper on the refining of blister copper in the *Bulletin of the American*

Institute of Mining Engineers for June, 1912, H. B. Emrich states that copper of good conductivity has been deposited from commercial electrolytes much richer in arsenic than is usually allowed in practice, and that impure cathodes frequently show high conductivity, although wires drawn from them after the impurities are alloyed with the copper by melting are of low conductivity. He therefore concludes that the injurious impurities come from slime caught mechanically upon the cathodes, and not from the electrolytic deposition of the arsenic, antimony, etc. If this be the case, refiners may, by securing smoother cathodes through the use of addition agents, and by keeping the electrolyte as free as possible from suspended matter, so increase the purity of electrolytic copper as to bring its market price to par with Lake copper, if not above the latter.

Renewed interest in the electrolytic refining of iron is indicated by the announcement of two new processes. Mr. Cowper-Coles, of England, the versatile inventor of electrochemical processes, has announced a new method for the electro-deposition of iron, and Dr. Duisberg, of the Verein Deutscher Chemiker, in a paper before the recent Congress of Applied Chemistry, referred to a new method for preparing ductile electrolytic iron possessing remarkable magnetic properties. The possibility of electrolytically refining iron on a commercial scale was pointed out nearly ten years ago by Prof. C. F. Burgess, under whose direction several tons of electrolytic iron have been produced, and used in an investigation of the properties of iron alloys.

The Electric Furnace.—The fixation of atmospheric nitrogen, which ten years ago was only in the experimental stage, is now the largest electrochemical industry, from the standpoint of power consumption, and bids fair to maintain its lead for many years to come. The output of the works now making calcium cyanamide is estimated at 260,000 tons annually, and will be greatly augmented in the immediate future, while the manufacture of nitrates

is also increasing at a rapid rate. (See also *Industrial Chemistry, infra.*)

When reading recent gloomy predictions in regard to the future of the electric zinc furnace, it is comforting to recall that several thousand tons of zinc were produced in the electric furnaces of Norway and Sweden, and that the year has been one of active experimentation elsewhere. Although serious difficulties are yet to be overcome in electric smelting for the production of zinc, the zinc retort is so inefficient as to require the ultimate success of the electric method.

An important advance in the electric steel industry has been the successful manufacture of carbon electrodes suitable for the largest arc furnaces now in use. The arc type of steel furnace is especially severe on electrodes. Carbon electrodes which stand well in a carbide or ferro-silicon furnace, where they are buried in the charge, may crack and fall to pieces when exposed to the heated atmosphere of the steel furnace. The larger the electrode the greater its liability to crack. When the 15-ton furnaces of the U. S. Steel Corporation were started, the manufacturers of carbon electrodes were unable to supply durable electrodes for these furnaces. Over two years of experimenting, costly to both manufacturer and user, has finally resulted in the production of satisfactory electrodes, and one of the big items of cost in the electric refining of steel in the arc furnace has been greatly reduced.

The Storage Battery.—A novel application of eutectic alloys to the production of storage-battery plates is announced in *Metallurgical and Chemical Engineering* for September. The method consists in cooling lead-antimony alloys richer in lead than the eutectic mixture, and, after the excess lead has frozen out, the liquid eutectic is removed by centrifugal action. The result is a mass of lead containing millions of pores. Storage cells made from such plates are said to have $4\frac{1}{2}$ times the capacity per pound of the ordinary lead cell. The process is the invention of Prof. H. I. Hannover, Principal of

the Royal Technical College, Copenhagen.

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

JAMES R. WITHROW

The year 1912 has been one of great progress in the field of industrial chemistry. The continued interest on the part of the whole chemical world in the great series of investigations under way for the industrial production of synthetic rubber was one of the most prominent features of the year. The high-water mark of achievement, however, came when Bernsthen announced the successful issue of experiments on the industrial synthesis of ammonia. Aside from these two things there follows an enumeration of facts relating to other industries which indicate not only the progress made but also the general direction of advance in the field as a whole.

Synthetic Rubber.—One of the noteworthy features of the year in the field of industrial chemistry was the meetings of the Eighth International Congress of Applied Chemistry in Washington and New York, and described in the article immediately following. No topic aroused such keen interest as the friendly clash between Great Britain and Germany over the question of priority of discovery and of the progress made toward the industrial realization of synthetic rubber. The exhibition of large specimens of synthetic rubber, clear honey yellow in color and of excellent physical quality, from the Elberfeld laboratories in Germany, together with the sweeping claims to preëminence and priority by the German champion, Duisberg, were not allowed to go unchallenged by the British chemists present. At the earliest opportunity the British stated the progress which had been made by them, and appeared effectually to settle the priority question by exhibiting the identical specimens of isoprene and caoutchouc prepared by Tilden in England many years ago. Not only that, but from some of Tilden's clear transparent polymerized, but still liquid, isoprene, the British champion, Prof. William Henry Per-

kins, actually coagulated from its original solution some of the very rubber or caoutchouc made by Tilden in England 17 years before the German discovery.

If this settles the question of priority of discovery, to the Germans apparently must go the credit of having made the best use of the discovery and of being at the present time much further advanced in its industrial application. They even exhibited automobile tires made of synthetic rubber which had run over a thousand miles. The British, however, showed attractive syntheses outlines and claimed to have incidentally solved at least one old industrial problem which happened to thrust itself in the path of the main inquiry. This is the production of high yields of amyl alcohol by fermentation. At the present time this substance is in high and increasing demand as an ingredient of the solvent used in most lacquers. It is obtained from fusel oil, which is a small by-product in the ordinary alcoholic fermentation. To make fusel oil or amyl alcohol the main product of a fermentation has been much desired, but success was considered highly improbable.

The British claim also to have succeeded in converting starch into acetone, by a different ferment, at a very profitable rate. This in itself, if successful, is of great importance. At the present time acetone is entirely obtained from products of the destructive distillation of wood, either directly or indirectly. Its cost is increasing at a rapid rate. A new source of supply would be welcomed by consumers. The main uses for acetone are as a solvent and for the production of chloroform. There are other ways of making chloroform, but for various reasons the acetone method is still the most popular. The properties of chloroform give it preference, as a rule, over ether for anesthesia, but its higher death rate has always been against it. While the cause of this higher mortality is not a matter of agreement, to any one familiar with the complex nature of the products of the destructive distillation of wood and the poisonous and dangerous properties of

some of these substances, it is not surprising that even the most highly purified chloroform made from acetone should have a high death rate. A source of acetone from fermentation would not be expected to have such rank or dangerous contamination. The resulting chloroform therefore should be a better product.

As is commonly the case in such investigations, the pursuit of synthetic rubber may be its own reward irrespective of the issue of the main project. Since the Germans start with coal tar and the British with starch or alcohol, there will probably be several routes by which rubber may be produced, just as there are in the case of synthetic indigo. In the production of indigo there were found to be derivatives of varying properties; in the case of the rubber, likewise, the homologues of isoprene are found to give rubberlike substances of diverse properties. This discovery alone opens up a whole new horizon of query as to the possibility of solving, by means of these related bodies, many of the existing problems of rubber, such, for instance, as its preservation from hardening with age.

Synthetic Ammonia.—Of equal interest with the status of synthetic rubber is the greatest real achievement in industrial chemistry in several years—the synthesis of ammonia. As in the case of many other industrial chemical problems, there are more paths than one to the chemical fixation of atmospheric nitrogen. The first route was by direct production of oxides of nitrogen—the method used in Norway. The second was by fixation of the nitrogen to a metal or nonmetal, as in the production of calcium cyanamide. The third route is through the synthesis of ammonia from pure hydrogen and nitrogen. This path, like the second, is not so direct as the Norway method. The problem has long engrossed the attention of one of the great organized groups of German chemists and numerous patents have been taken out. Until recently the problem has appeared absolutely impossible of solution. Now it is announced by the highest German authority that it is fully solved,

on a commercial scale, and that the walls of the first factory for the manufacture of synthetic ammonia are already rising, at the time of this writing, at Oppau, near Ludwigshafen-am-Rhine.

The process consists in repeatedly passing a highly purified mixture of nitrogen and hydrogen over a catalyzer or contact mass, as in the familiar contact sulphuric acid process, with intermediate removal of the small amount of ammonia formed in each passage. The gaseous mixture is subjected to high pressure and temperature. The entire series of operations are performed in a closed circuit, with provision for withdrawal of product and continuous supply of fresh gases as needed. Many suitable contact materials have been discovered, but iron, uranium, and tungsten seem to be most efficient. Pressures as high as 200 atmospheres have been used with a temperature of 650 to 700 deg. C. The yield is 250 grams of ammonia per litre of contact space per hour.

Many thousands of experiments were made to discover suitable catalyzers. Catalyzers are substances which will accelerate or diminish the velocity of a given reaction. Some of them have been known to be easily incapacitated or poisoned by minute traces of other substances, and this fact alone made necessary thousands of experiments to study these enemies of the catalyzers and methods of defense. This investigation brought an additional reward in the discovery that the ammonia catalysts in general are made more active by the presence of certain foreign bodies. Among these "promoters" are oxides, hydroxides or salts of the alkalis, alkaline earths, the earth metals, and many other substances of the most varied nature, including even metals themselves. Indeed it has been found that the property is common to all catalysts; a minute trace of the proper substance will raise the activity of any catalyzer. The most prominent enemies of the ammonia catalysts are sulphur and its compounds, selenium, tellurium, phosphorus, arsenic, boron, and metals with low melting points, such as tin, bismuth, and lead. In the

case of the sulphuric catalysts, almost the exact opposite is true. These substances thrive in presence of sulphur compounds, while the ammonia catalysts may be injured by one part of sulphur in a million parts of gas mixture; hence the necessity of highly purified nitrogen and hydrogen. The gases are obtained and purified by liquefaction, the nitrogen from air and the hydrogen from water gas, the carbon monoxide from the latter process being used for power production.

Because of the imminent danger of explosion from admixture of even small amounts of oxygen or air at the high temperature and pressure used, the whole apparatus must be built in bomb-proof compartments. Ingenious automatic oxygen detectors have been invented which sound an alarm when the oxygen percentage nears the danger mark. The choice of materials of construction for apparatus to be used at such temperatures and pressure was an enormous pioneer problem in chemical engineering. Hydrogen under these conditions removes carbon from steel. The formation of nitride of iron must be avoided, since the capacity of steel to withstand pressure is greatly reduced thereby. Iron itself takes up hydrogen and is completely changed in quality; at these high pressures also it is quite pervious to hydrogen. All these difficulties have at length been overcome by suitable construction.

In 1911 over 190 million dollars' worth of nitrogen manures were used throughout the world. For the past ten years the average annual increase in the consumption of actual nitrogen was 38,000 tons, corresponding with 185,000 tons of ammonium sulphate. Hence it appears that there will be ample field for the production of enormous amounts of synthetic ammonium sulphate without injuring any established industry. The names of the great German chemists which stand linked to this new achievement in industrial chemistry are Haber, Bosch, and Bernsten.

Other Processes of Nitrogen Fixation.—Only a short time ago the chemical world was aroused by the

wonderful work in Norway in utilizing atmospheric nitrogen by means of the electric arc. That this is now a permanent success is shown not only by the fact that the ammonium nitrate manufactured from nitric acid derived from the air is the purest and most desired for the manufacture of explosives, especially in the United States, but also by the fact that many thousands of tons of nitrate of lime or Norway saltpeter are shipped past the very doors of Chile, the world's source of the natural nitrate, to California and Hawaii to be applied as a fertilizer in fruit orchards and sugar plantations, and the demand this year is twice as great as last. To hear Dr. Samuel Eyde tell of how he has built up this marvelous industry to its present successful condition was the greatest treat of the recent Congress of Applied Chemistry. Cyanamide is the well-known example of the second method for the fixation of atmospheric nitrogen. This substance, which is really calcium cyanamide, has been successfully produced in this country, as well as abroad, for some few years. A second and larger plant for the manufacture of cyanamide is being constructed, or is about to be constructed, in Alabama. This district in the southern Appalachians bids fair to become the electrochemical center of the world. Already there is a plant in operation producing nitrates from the atmosphere and large aluminium producing interests are arranging to take advantage of hydroelectric facilities near their raw material, the Georgia bauxite.

Tungsten.—The progressive development of illumination and electrical engineering have created demands which have made necessary the isolation and study of elements hitherto little known, although some of their salts, such as borax, are familiar in every household. The recent production of wrought tungsten metal, making the tungsten lamp a permanent success, will stand as one of the great achievements of American chemists. Now the use of wrought tungsten as a projectile is being carefully investigated. It offers, in this field, possibilities not

possessed by any other metal. The present small-arm service projectile is made of lead with a jacket of copper-nickel alloy. Iron would be cheaper, but the higher specific gravity of lead gives it an advantage over iron. Lead bullets can be used of smaller diameter than iron; hence they meet less air resistance and have flatter trajectory and longer range. Of all the metals, with the exception of tungsten, with properties superior to lead for this purpose, the cheapest is gold. The density of wrought tungsten is 19.3, while that of lead is 11.5. To take the rifling and to act as a gas check, the tungsten bullet will require a soft metal band at its base. The hardness and high tensile strength of wrought tungsten will give high penetrating power. The constants of the trajectory of tungsten bullets are now being determined experimentally. Among other articles for which tungsten is a satisfactory material are standard weights, acid-proof dishes and tubes, standard units of resistance, unmagnetizable watch springs, knife blades, and the reinforcement of asbestos curtains and fireproof coverings. From tungsten can be drawn a finer wire than from any other metal (0.0005 mm. in diameter), and because of this extreme ductility and its other favorable properties, it is suggested for galvanometer suspensions and cross hairs in telescopes, also for use in surgery in place of the coarser gold and silver wires. The cost of crude tungsten is now about twice that of crude nickel, but pure tungsten costs between \$10 and \$12 a pound.

Boron.—The element boron, first produced in a high degree of purity and in large quantities a few years ago, is now being studied and exploited in the interest mainly of the electrical engineer. The convenient breakdown voltage of boron bids fair to make it the safety valve for electrical pressure. This is owing to the fact that a strip of boron which shows a resistance at 27 deg. C. of 775,000 units (ohms) shows a resistance of only 7 units at 520 deg. C. and a small fraction of a unit at 1,000 deg. C. Since the ability of a conductor to carry cur-

rent rises as the resistance decreases and since the mere passage of the current through a resistance liberates heat, in this case sufficient to break down the resistance of the boron, an excessive current pressure in a given conductor may be automatically released by having a lamp with a suitable boron filament in shunt with the main circuit. The fact that boron is unaffected after repeated use in this way gives us a material which can displace fuses, circuit breakers, and the like. With an extra path provided for any unexpected surge of current without in any way breaking the main circuit, the whole system automatically adjusts itself to new conditions; when the relief or exciting cause allows the voltage to drop, the system adjusts itself again to its original condition, and the boron safety valve is again ready for the next contingency. More important still is the use of boron for regulation purposes. The volt-ampere curve of boron conductors can be so arranged as to have a horizontal part, that is, a constant voltage over a large range of current. A circuit shunted by such a boron conductor will, therefore, keep constant voltage no matter what the fluctuations of the impressed voltage are. Such a boron conductor can also be used in the field of generators to regulate the excitation and counteract the tendency toward changes of voltage due to speed changes and the like. These boron regulators, as they are called, are being introduced into trains, automobiles, etc. The melting point of boron is 2,300 deg. C., but it is easily welded to any metal out of contact with air. It is hard and tough and has been substituted for sapphires in the bearings of electrical instruments. Its nitride is the most refractory substance known. The low electrical conductivity of the nitride at high temperature makes it of value for use in electric furnaces and heating devices.

White Lead.—White lead is being successfully manufactured in this country by a new process called the "mild" process. Its essential feature is the entire absence of the use of any acid in its manufacture. All

other methods of making ordinary white lead require acetic acid to corrode the lead before carbonating. The new process does not do so, and, in addition, is a rapid method, requiring weeks, as against months by the old Dutch process. The process begins in "atomizing" the melted lead with superheated steam, giving a lead slime. This is oxidized while wet to give a hydrated oxide which is yellow brown in color. This is separated from uncharged lead on shaking tables and is carbonated by carbon dioxide gas made from burning coke.

Solidifying Liquid Fats.—The conversion of oleic acid, a liquid fatty acid, into stearic acid, a solid fatty acid in great demand for candle stock, has been one of the great achievements of recent years in organic industrial chemistry. The problem appears simple, for the difference between the two actually consists of only two hydrogen atoms, and oleic acid is so constituted as to be theoretically very receptive to hydrogen under proper conditions, but the practical difficulties arising have caused authorities in the subject to pronounce the problem industrially unsolvable. Common fats are largely made up of derivatives of these two fatty acids called glycerides. The glyceride of oleic acid is liquid, while that of stearic acid is solid. Until lately little attention has been paid to the conversion of one of these bodies into the other, although there is much demand for solid fats to replace lard in cooking. The secret of adding hydrogen, however, has been worked out on these fats and the liquid fats of cottonseed oil are now being converted into a solid white fat of much industrial value. The new process is called hydrogenation and is performed in presence of a catalyzer, nickel being preferred.

Utilization of Wastes.—Sweden, which so often leads in improvements in the cellulose industry, has brought into practice the utilization of the waste sulphite liquor from the manufacture of cellulose pulp for the production of ethyl alcohol. The yield is said to be 14 gal. (100 per cent.) per short ton of cellulose.

The alcohol is contaminated, and at present is used only for denaturing, but if the cost of production can be reduced materially, the enormous quantities derivable from this source throughout the world would have an interesting effect upon the liquid-fuel problem.

The first plant in the world for the recovery of resins from waste soda pulp liquor in the manufacture of paper pulp is now in operation in the United States. The first electrolytic plant in the world for recovering rubber from waste has been erected in the United States during the year, and, if it proves as successful as the preliminary investigation on a commercial scale indicated, will materially assist in this important field of conservation.

Transportation of Gases.—Much study is being given at present to the problems involved in retaining under high pressure industrial gases. The gases are for the most part transported in liquid form, and as their sudden release, outside of the mechanical damage, would be a serious menace to human life, careful precautions have been taken to prevent such mishaps. Much ingenuity is shown in the construction of containers. The increasing demand for oxy-hydrogen and oxy-acetylene in the arts is causing vigorous growth in the production and transportation of these gases. The present and developing improvements in the storage of acetylene gas on motor vehicles and for purposes of suburban household illumination, and the recovery of gasoline-like substances in large amounts from natural gas are other phases of progress in this branch of chemical industry.

Corrosion Resisting Materials.—The trade name "alundum" is applied to a product of the electric furnace which has been long used as an abrasive. It is really fused alumina, corresponding in composition and properties to the mineral corundum. Properties other than its hardness are now being exploited. It is found to be very inactive chemically, even at high temperatures, and hence highly resistant to chemical corrosion. This leads to the hope that,

since with the help of a slight binder it can easily be moulded into any shape and burnt, it may become a useful material for the construction of parts of chemical engineering apparatus subjected to chemical corrosion. Its refractoriness also (platinum may be melted in it) makes it of service in furnace linings, muffles, furnace tubes, etc. That it can be made of varying porosity, gives another material for filters, especially for acids. Much laboratory ware is now made of alundum and much effort is being expended to overcome the difficulties in sight.

The development of alloy steels is bringing to light many valuable mixtures for chemical engineering construction. Mere heat treatment of common iron greatly increases its resistance to acid corrosion. If the thermic treatment is applied to alloys of iron with tungsten, chromium, molybdenum, and aluminium, the resistance is much greater. An alloy of 60 per cent. chromium, 35 per cent. iron, and 2 or 3 per cent. molybdenum, for instance, will withstand even boiling aqua regia. It is to the use of one of these alloys that the new synthetic ammonia process owes the successful solution of the chemical engineering difficulties in its way, for they possess a high degree of hardness even at 400 to 500 deg. C.

Miscellaneous Progress.—Space is available for only the briefest mention, in conclusion, of the advances in a number of chemical industries. The mechanical sulphate furnace of Mannheim is able to turn out seven tons per day of sodium sulphate, with its accompanying hydrochloric acid. This is the first successful mechanical furnace for this purpose. The Wedge furnace with its ability to roast 30 tons of pyrites per day is proving more successful all the time. The new continuous apparatus, both with and without stirrers, for making nitric acid from nitrate have proved a success in Germany. The thio-gen method of eliminating and utilizing sulphur dioxide in smelter fume for conversion into sulphur is being tried out at a smelter in California.

INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY

ALEXANDER SMITH

By invitation of the Congress of the United States, the Eighth International Congress of Applied Chemistry (1912) was held in this country, Sept. 4 to 14. The Congress was welcomed in Washington by its patron, President Taft, and was entertained there for two days. The scientific meetings were then held in New York.

The success of the Congress was due primarily to the organization laboriously perfected by its president, Dr. William H. Nichols, and its secretary, Dr. B. C. Hesse, with the effective coöperation of the honorary president, Prof. E. W. Morley, and a large group of chemists.

Statistics.—The membership in the Congress reached 4,500, and 2,200 members, representing 30 different countries, were in attendance.

The scientific meetings were held at Columbia University. Twenty-four sections, for the discussion of papers upon every branch of applied chemistry, met for the most part simultaneously. Four general lectures, representing the four official languages, were delivered in the Great Hall of the College of the City of New York. The sections were:

- Analytical Chemistry.
- Metallurgy and Mining.
- Silicate Industries.
- Inorganic Chemistry.
- Explosives.
- Organic Chemistry.
- Coal-Tar Colors and Dyestuffs.
- Industry and Chemistry of Sugar.
- India Rubber and Other Plastics.
- Fuels and Asphalt.
- Fats, Fatty Oils and Soaps.
- Paints, Drying Oils and Varnishes.
- Starch, Cellulose and Paper.
- Fermentation.
- Agricultural Chemistry.
- Hygiene.
- Pharmaceutical Chemistry.
- Bromatology.
- Physiological Chemistry and Pharmacology.
- Photochemistry.
- Electrochemistry.
- Physical Chemistry.
- Law and Legislation Affecting Chemical Industry.
- Political Economy and Conservation of Natural Resources.

Special Lectures.—To facilitate intelligent discussion the plan—a novel one when undertaken on so large a scale and for an organization of such widely scattered membership—of printing the papers in advance was carried out. Over 600 papers, received before June 30, were printed (in the original languages) and were distributed to the members as they registered. The papers were classified into 24 volumes, one for each section, and occupied over 5,000 pages. It was felt that reports appearing, like those of the preceding congress, more than two years after the meeting, lost a large part of their value. Hence, the complete *Report*, including additional papers, the discussions, the lectures, and the actions of the Congress was delivered in complete form to the members on Dec. 31.

The Longer Excursions.—After the meeting, two special trains carried large groups of the members to various centers of interest to chemists. The longer trip included the Bakersfield oil wells, the borax mines at Lang, Cal., the Gary steel works, which, with its utilization of by-products, is the most complete in the world, the by-product sulphuric acid works at Ducktown, Tenn., the Pauling process for making nitric acid from the atmosphere at Great Falls, the extraction of gasoline from natural gas by fractionation at Pittsburgh, and the Nichols Copper Co.'s factory at Laurel Hill, L. I., where a million pounds of copper are refined daily.

General Lectures.—Of the seven general lectures, the ones which excited most interest were those of Dr. Eyde, Prof. Bernthsen, and Prof. Perkins. The first showed, largely by means of pictures, the astonishing development in Norway of the industries for the fixation of atmospheric nitrogen. The second dealt with the new Badische process for the synthesis of ammonia, which was carried out on the lecture table. The third concerned the history of the synthesis of rubber, and the original specimens of artificial rubber, first made by Tilden, were shown. (See *Industrial Chemistry and Chemical Engineering*, *supra*.)

Actions of the Congress.—At the final meeting the continued publication of the "Annual Table of Chemical and Physical Constants" was authorized, the triennial publication of international atomic weights (1912, 1915, etc.) was substituted for the annual one hitherto in force, and provision was made for the creation of international standards for drugs.

The Ninth Congress was appointed to be held at St. Petersburg in 1915, under the presidency of the eminent

physical chemist, Prof. Paul Walden of Riga.

Bibliography.—The full proceedings of the Congress are published in the *Report of the Eighth International Congress of Applied Chemistry, New York, 1912*. General summaries are to be found in *Science* (N. S.), 36, 365-8, and *Jour. Industrial and Engineering Chemistry*, 4, 10ff. Several papers are reprinted in the periodical last cited and in *Metallurgical and Chemical Engineering*, 10, 9ff.

PHYSICS

F. A. SAUNDERS

The past year has brought forth a noteworthy advance in all branches of physics. It is impossible to give an adequate account of all that has been done in a review of this character, nor is it easy to apportion credit duly to the scientific workers in their numerous fields; but it is safe to say that the educational institutions of this country and the scientific bureaus of the Government are turning out a very honorable share of the important work of the world in this subject. Especial mention ought to be made of the Bureau of Standards, where a very large amount of excellent research is accomplished every year, in addition to the vast quantity of routine scientific measurements which the Bureau carries on for the direct benefit of the general public.

Ions.—Of all fields, perhaps the one in which the most interesting work has appeared during the year has to do with the almost infinitely small particles of which matter is composed, and with the way in which these break up, under conditions of electrical excitement, into ions, or charged bodies of atomic size, or smaller. One article which appeals strongly to the imagination is by C. T. R. Wilson, who has succeeded in photographing the paths followed by individual positive (α) and negative (β) particles, as these were shot through a mass of gas. The method is simple. A chamber is filled with dust-free air, saturated with water vapor. A sudden expansion, produced in this air (if of the right amount), causes a condensation of

the water in the form of very small drops upon any ions that may be present. If a particle is projected at a sufficient speed into this gas, just as the condensation is under way, it may break up many of the molecules which it encounters into ions, and these will form nuclei for water drops, which can be photographed, immediately after their formation, by the light from a suitably timed electric spark. Such projectiles are obtained from radioactive substances, or by means of X-rays, or otherwise. The α rays leave strong trails, containing thousands of minute drops in the space of an inch, and it is often evident that the projected particle has been suddenly deflected from its course by a collision, especially toward the end of its flight, when its speed is presumably considerably reduced. The tracks of the β particles from radioactive sources may take the form of a straight path, if their velocity is very high; but if the particles are projected from the molecules of a gas under the influence of the X-rays, the velocity is much less and the path is curved and twisted in a most irregular manner, and marked by a more copious ionization than is the case for the swifter rays. The paths of the β particles show gradual curvatures, rather than sudden bends, such as the α trails exhibit. X-rays do not produce ions directly in a gas, but set free β particles, which travel on the average half an inch or so through air at ordinary pressures, producing a large number of ions

along the whole trail. The β particles appear to start out indifferently in all directions, as though "fired" by some trigger action inside the molecule, rather than knocked out by the force of the X-rays. While some of the conclusions drawn from a study of Wilson's photographs have been reached already from less direct reasoning, there is a convincing quality about the photographs which nothing else possesses. When one considers the minuteness of the β particles, the fact that a trail of a single one can be followed is amazing, for the width of the Atlantic Ocean is no greater compared with the width of an ordinary hair than is the latter with the diameter of a β particle.

Sir J. J. Thomson has added greatly to our knowledge of what happens in a "vacuum" tube when a discharge of electricity occurs through it; and the conditions, even in the simplest cases, prove to be astonishingly complex. This year he has published articles on "positive rays" in discharge tubes. These rays can be deviated both by electric and by magnetic forces, and, if these effects are at right angles to one another, and the rays are allowed to record themselves on a photographic plate inside the tube, much information can be obtained as to the nature of the particles in the rays, their charge and their velocity. In this way, a complete chemical analysis may be made of the gas in the tube, giving the charges borne by each kind of material present. The atoms of different gases are usually to be found, bearing a charge of but one electron each; doubly or multiply-charged atoms are also sometimes present; but doubly charged molecules do not occur. There is good evidence to show that a positively charged atom, traveling in a bundle of positive rays at a high velocity may lose its positive charge and continue its career, or even acquire a negative charge by collisions with gas molecules or ions in its way. (See also *Inorganic and Physical Chemistry, supra*.)

In a very recent article Thomson shows that the mercury atom can occur with as many as eight ele-

mentary charges, and the evidence is definite that there are only two ways in which it can become ionized, one by losing one electron, the other by losing eight electrons at once, subsequently, perhaps, picking up electrons in its wanderings, so as to possess at any time any charge from one to eight. He considers it likely that there may be eight electrons attached to the mercury atom with about the same degree of firmness, so that, on the occasion of a collision of sufficient severity, all would be detached at once, whereas a lighter impact might fail to dislodge any.

It is curious to note that a rays, if they were shot out by the sun, would penetrate into the upper layers of our atmosphere and produce electrical effects there. An elaborate theory has been worked out by Vegard to show that such a cause would account for aurorae, especially for those which exhibit the effect of "draperies."

Radioactivity.—By far the most important sources of α and β rays are the radioactive materials, the study of which lies part way between physics and chemistry. During the year a great deal of important work has appeared on this subject.

The sources of radioactive materials in the earth (rocks, mineral springs, sea water, lava, sand, air, etc.) have been further tested, and the investigations have been carried on not only in the laboratory but underground in mines, and even in balloons. In the latter case, a study of the earth's penetrating radiation revealed the curious fact that this does not materially diminish, even at a height of over a thousand metres; so that one is tempted to wonder whether there are not causes for the production of ions in the atmosphere other than those furnished by the radioactive constituents of the soil.

The most powerful aid to the discovery of new radioactive substances has come from a study of the "ranges" of the α rays emitted during the transformation from one element to the next down in the scale. For instance, we have to record this year the discovery by Geiger and Nuttall that uranium emits α particles having two distinct ranges, differing,

however, by only four millimetres, and that these are produced by two consecutive transformations. First, uranium-I changes into uranium-II at such a rate that it will be half gone in five billion years, and uranium-II changes into something else, similarly, in the time of two million years. Moreover, a general connection has been found between the time of transformation and the range of the α particles produced, which will be of the greatest service both in sorting out new substances and in clearing up the theory of these changes. This relation has been shown to apply not only to the uranium-radium family but also to the members of the thorium and actinium families.

The substance known as radium-C has been found to break up in two different ways, most of it transforming to radium-D in the regular manner, but a small fraction changing to a new substance, radium-C₂, which probably belongs to a side branch of the radium family. Thorium-C is known to behave similarly, except that the proportion of thorium-C₂ produced is large.

Evidence has been obtained of the formation of chemical compounds of many of the radioactive substances, by observing their temperature of volatilization in the presence of various gases. It may be imagined that this is difficult, when the substances cannot be obtained in quantities large enough to be seen.

Geiger and Rutherford have worked out an experimental scheme for obtaining a photographic record of the number of α particles produced by a radioactive substance in a given time. A sensitive "string electrometer" records, by a quick motion of a spot of light, the arrival of a single α particle inside a testing vessel, and it is possible to count these at the rate of a thousand per minute by the new method. It is proposed to re-determine with a high degree of precision the number of α particles given off per second from one gram of radium. The method is probably delicate enough to detect the ionization produced by the "recoil" of a single atom, when an α particle is projected from it.

That the β rays given off by radioactive substances do not all move at the same speed has been long known. A careful study of them has recently been made for the thorium products by sorting them out, by magnetic deflections, into a sort of "spectrum." In this way it has been shown that each substance produces rays of characteristic velocities, and a new means has thus been developed for identifying substances by their β rays, roughly analogous to the use of light in spectrum analysis.

It is a question in regard to radioactive changes whether every atom which explodes fires off a single α or β particle (or both, as the case may be) at the time of the explosion, or more than one. Now that we can count the particles and photograph their tracks, it is possible that we may soon know more about this question. A step in this direction has been taken by Moseley, who concludes that each atom of radium-B and of radium-C emits one β particle on disintegration; but for radium-E the case is not so clear; some atoms may transform without emitting any particles.

Another interesting point that has been worked upon during the year is the question whether the newly-formed products are charged, or not. The gas "radium emanation" breaks up into radium-A, the first of several products forming the "active deposit." This deposit is more readily collected upon negatively charged bodies than elsewhere. Yet, the change from the uncharged emanation to radium-A involves the projection of a positive α particle, which ought to leave the residue negatively charged, and this would be repelled, instead of attracted, by negatively charged bodies. Wellisch and Bronson have found that there are no negatively charged particles, but that there are neutral ones, as well as positive. Further investigations are required to explain these facts.

New varieties of rays are still being discovered; one from polonium has been found this year by Bumstead and McGougan, similar to β rays, but considerably slower. The γ radiation (see also under "X-rays," *infra*) has been used in a convenient method de-

vised by Rutherford and Chadwick for measuring quantities of radium.

A very recent article by Rutherford deserves careful attention, as it contains a study of the processes, going on in the atom during a radioactive explosion, which produce β and γ rays. It is apparently true that each atom shoots off one β particle when it changes over, and one γ "ray" would be expected to be simultaneously produced. It is found, however, that the β and γ rays are not always in proportion, at least in their strength. Only those products which emit well-defined groups of β rays moving at different speeds emit also a strong γ radiation. Rutherford considers the possibility of the atoms breaking up in a number of distinct ways, each way producing the ejection of a β particle at a speed which is definite, but different for each mode of disintegration. A connection is shown between this and the production of γ rays, and the "secondary" X-rays given off by different substances are also due to the same causes. The atom is considered as a mass of positive electricity, surrounded by a distribution of electrons in rapid motion, probably rotating. There may be two causes for instability, one producing the ejection of a γ particle from the center of the atom, and the other a β particle from the outer parts of the atom. The bearing of this theory on several radioactive phenomena is briefly considered. Prof. Rutherford and his co-workers at the University of Manchester are turning out an astonishing amount of excellent work each year on the subject of radioactivity.

X-Rays.—The γ rays and X-rays are believed to be the same, though produced in somewhat different ways. Each is caused by the stopping, or starting, of negative electrons, shot out as β , or as cathode rays. The real nature of the X-rays is still an open question. Many regard them as pulses, or shocks, which are propagated somewhat in the manner of very short electric waves; while others now argue that they are projected streams of minute particles. The past year has brought no very great advance toward a settlement of this question. Some light has been thrown,

however, upon the effects produced by the rays, especially upon the "secondary" radiation which they excite in bodies upon which they fall. The nature of this radiation has been shown to depend upon the "hardness" of the X-rays, and upon the atomic weight of the substance struck by them. The ionization produced by them, and their absorption by matter is being further examined; the absorption of air has been tested over distances up to 100 m.

Some experimental improvements are announced in the manner of generating the rays; in particular, an electrical generator has been invented, which gives unidirectional impulses of suitable voltage for this purpose, and this promises to be a convenience. (See also *Inorganic and Physical Chemistry, supra.*)

Terrestrial Physics.—The heat developed by radioactive changes is now well known, and the amount of radioactive matter in the earth can be estimated. Laby has shown, in an interesting address before the Australian Association for the Advancement of Science, that the amount of heat that might reasonably be expected from radioactive sources is more than sufficient to keep the earth from becoming any cooler, in spite of the fact that it is pouring a steady stream of heat into space. Indeed, the radioactive material in the earth may be actually heating it up. Laby considers the effect of this fact upon the "age" of the earth. Kelvin found the present rate at which heat is being lost from the earth, and assumed that the earth had cooled off by this process since the crust first solidified. He was then enabled to calculate this time, which turned out to be of the order of 100 million years. If we take the radioactive material into account, this reasoning will lead to an age which is indefinitely long. It is difficult, however, to estimate the amount of radioactive material in the earth, and it may be that other methods of calculating the earth's age are more trustworthy. The best results point to two or three hundred million years.

The heat flow in the earth is intimately connected with underground temperatures. An interesting study

has appeared this year by Lauchli, of temperatures in a deeply overlaid tunnel, in which it is pointed out how, in boring the tunnel, the rock temperatures will indicate the proximity of water, and thus give warning of danger to the workers.

Reliable warnings of icebergs at sea have been eagerly sought for since the *Titanic* disaster. Probably the best device brought out for this purpose is the one by Barnes, who has placed a sensitive electrical resistance thermometer in the water, and connected it to an automatic recorder, so that a permanent and continuous record of the water temperatures, accurate to a thousandth of a degree, is obtained. This scheme has been tested on several northern sea voyages with surprising results. A typical "iceberg effect" has been discovered, which consists first of all of a considerable rise in temperature, beginning several miles away from the iceberg, ample warning being thus given at a distance of over half a mile. To explain this curious effect, Barnes at first assumed that the fresh water from the melting ice floated upon the surface and became warmer by contact with the air, but analyses of the composition of the water, published in *Nature* for Dec. 12, showed no appreciable difference between the surface water near an iceberg and that elsewhere. At present no very convincing explanation is available. The nature of this iceberg effect will probably turn out to be somewhat different at different seasons of the year, but there seems no doubt that the method is capable of yielding successful results. A method based on electrical conductivity of the sea water has also been suggested, and may prove to be useful, though the analyses above mentioned make it doubtful if any considerable success will be attained by it. (See also XXV, *Oceanography*.)

The earth's magnetism has been the subject of considerable theoretical work during the past year. Swann considers possible causes for it, due to electric currents in the earth, or to the presence of electric charges rotating with the earth, or even to rotations of electrons within the molecules of matter. He is disposed to

favor the latter assumption. Bauer thinks it possible that there are electric currents circulating about the earth, following the parallels of latitude more or less, but disturbed by local causes in such a way as to account for the observed position of the magnetic pole. Schuster also deals with the same subject in a presidential address before the Physical Society of London. (See also XXV, *Terrestrial Magnetism*.)

The electrical condition of the atmosphere is being carefully observed under a variety of conditions. Gockel has obtained traces of a connection between variations in terrestrial magnetism and the vertical electric currents between the air and the ground, which will, if established, prove very important. Nippoldt has found a variation of the conductivity of the air over the Pacific Ocean which changes with the latitude, very likely due to variations in the proportions of sea and land. The electric charge brought down by rain has also received some attention, and is found to be usually positive, but to vary with circumstances in no very simple manner.

Electricity.—R. W. Wood has made some interesting experiments on the conducting power of thin metal films which have been cut across by a diamond, thus producing clean, though narrow, breaks in the continuity of the metal. The cuts were found to increase the resistance of the films much less than would be expected. The experiments were then varied by measuring the current across an air space between flat surfaces placed parallel and extremely close together, but not in contact; the distance of separation being measured by optical means in terms of the wave-length of light. In every case considerable conductivity was found, even for very low applied voltages. The electron theory of electric conduction requires that the metals be supplied with a large number of free electrons within their volume. These experiments would indicate that the electrons also extend out for a short distance beyond the actual surfaces and form a sort of atmosphere surrounding the metal.

Becquerel describes a new phenomenon. The "Hall effect," a sort of side

shift of a current in a conductor due to the action of a magnetic field, has given the theorists a good deal of trouble. The direction of the effect is different in different materials, and various causes have been suggested. It is now found that, in the case of bismuth, the direction of the Hall effect reverses with a sufficiently strong magnetic field, and varies, moreover, with the temperature. An explanation, applicable to a strongly diamagnetic substance like bismuth, is lacking. Along somewhat the same subject, Williams presents a study of the motion of mercury when a current passes through it transverse to a strong magnetic field, and proposes that these motions may furnish a new method for conveniently measuring the strength of magnetic fields.

The electric spark is the subject of a very interesting article by Milner, in which he presents an illuminating theory (based on ionization) of the processes occurring in this complicated phenomenon.

An important development of the electron theory is furnished by Richardson, who has continued his splendid series of researches by a paper explaining the connection between contact electromotive force and thermoelectricity.

B. O. Pierce has made a careful study and given satisfactory explanations of anomalous magnetization of iron; that is, of the curious fact that, on breaking the magnetizing current in an electromagnet, the iron core may be found to be magnetized in the reversed sense.

A careful inter-comparison of the electrical resistance standards of different nations by an international committee took place this year at the Bureau of Standards in Washington, and the results are presented by Rosa and Wolff.

Wireless Telegraphy.—Improvements in generating apparatus for wireless telegraphy are coming steadily, especially in the direction of producing a vigorous source of oscillations of high (and steady) frequency. Chaffee has invented a new "gap," a low-current, high-voltage discharge, between plates of copper and aluminium in an atmosphere of moist hydrogen, which, when suitably connected,

can be used for the production of "impact excitation" in an auxiliary circuit, and thereby very steady oscillations of enormous frequency can be produced. These are likely to be most useful in wireless telephony. The Poulsen type of high frequency generator is being used commercially with encouraging success between California and Hawaii. It is economical of power and little affected by disturbances.

Eccles gives an interesting study of the electric waves occurring in nature, and of the manner of propagation of electric waves in general in the earth's atmosphere, and the variation in distinctness of long-distance signals with the time of day. He bases his theory on the ionization of the atmosphere by sunlight.

Heat.—The limits of high and of low temperatures are each being extended, especially in regard to their accurate measurement. In high-temperature research the Geophysical Laboratory and the Bureau of Standards are taking a leading part. The scale of temperature is now accurate to a tenth of a degree centigrade up to over 600 deg., and to nearly the same degree of precision to 1,100 deg. The melting points of tungsten (3,005 deg.) and of other metals have been remeasured this year; as well as the specific heats of metals at high temperatures, a most ingenious new electrical method for this determination having been devised by Corbino. The thermal properties of water are still under investigation. Callendar has worked out a new method for the accurate determination of its specific heat, and Mohler reports on its expansion when "super-cooled" (without freezing) below the freezing point. In the domain of very low temperatures, Kamerlingh Onnes has made a notable study of the properties of liquid helium.

An ingenious method of measuring very low gas pressures, based on their heat conductivity, is presented by Hale, and a simple device, consisting mainly of an ordinary rubber band under tension, is reported by Trowbridge, for showing invisible heat radiation.

Mechanics.—Special mention must be made of the magnificent work of

Bridgman on high pressures, up to 20,000 atmospheres. His series of papers this year covers the mode of measuring such enormous pressures, the properties of liquid and solid mercury, and of water in the liquid and five solid forms, together with breaking tests of metals, and collapse of thick metallic cylinders.

Light.—Several excellent papers have appeared in spectroscopy. Lyman has extended the spectra of the alkali earths and of aluminium to very short wave lengths. Gale and Adams have made a most careful study of the changes of wave length occurring with pressure about the source of light, and A. S. King of the Zeeman effect for iron and titanium. The purity of light vibrations has been tested in vacuum tubes, and Fabry and Buisson have found that tubes of the rare gas krypton, cooled by liquid air, and made luminous by electric discharge, furnish light of more nearly a simple-vibration type than can be obtained from any other discharge tube. A similar tube (of neon) has been found by Coblenz to be remarkable in furnishing almost no "heat" rays, nearly all of its energy being given off in the form of light.

Exner and Haschek have completed a monumental work on the spectra of all the elements, involving much original work, of which perhaps the most interesting item is the arc spectrum of radium. This year has also been marked by the successful completion by Kayser of his great work on spectroscopy.

A new idea of the relations which may exist among the light vibrations forming the spectrum of a substance is furnished by the suggestion, by Mogendorff, that combination-vibrations may exist, analogous to combination-tones in acoustics. This idea should assist greatly in the classification of the lines of the spectrum into related groups.

A remarkable paper by Wood has appeared on the mechanism of reflection and absorption by mercury vapor. A true "resonance" radiation

has been observed, and a "resonance lamp" devised, which gives light of hitherto unattainable purity. Viewed by this light, a drop of warm mercury sends off a column of dense "smoke," the appearance being due to the absorption of the resonance light by the vapor rising from the drop. On increasing the pressure of mercury vapor in a vessel, a gradual succession of changes is observed, from the simple resonance radiation to a true reflection from the "surface" of the gas, similar to that from the surface of liquid mercury, though occurring for one wave length only, the vapor being entirely transparent for ordinary light. The "resonance spectra" of iodine vapor furnish a subject for a second paper of almost equal interest.

On the borderland between light and electricity lies the subject of photo-electricity, the emission of ions by substances when illuminated. An unusual number of able papers, both theoretical and experimental, have appeared this year on this subject, but it is impossible to give a brief abstract of their varied contents.

General Theories.—This review should not close without a brief mention of a great mass of theoretical work on the larger theories of physics. The cause of gravitation has received unusual attention this year, some half-dozen theories being urged to account for it, mostly electromagnetic in character. Longitudinal waves are suggested by Abraham, and ideas of "ether atoms" and other intangible things are to be found among the other papers. The theory of relativity is still being amplified and explained. Huntington has given a very lucid "approach" to it; though Magie, and others, view it with grave doubts. Some writers would discard the ether as a wornout figment of the imagination, but Ehrenfest concludes that we can hardly get along without it, and Nutting would retain it, perhaps as a "non-mechanical" medium. If the ether is no more, a genius of a high order is sorely needed to invent for us a suitable substitute.

XXVII. THE BIOLOGICAL SCIENCES

ORGANIC EVOLUTION

W. L. TOWER

The activities of the past year center around the phenomena of heredity, and the most conspicuous development therein is the further investigation of sex-limited and sex-linked inheritance in many organisms; in this field Morgan has been the leading investigator in his continued investigations on *Drosophila*. Confirmation of this linking of characters with the sex-determining agent in the germ, comes from many sources in diverse organisms, and the understanding of some of the conditions in the inheritance of human diseases, as recorded by Davenport, take on added significance, and are no longer enigmas.

The trend of the times is indicated in some of the general works that have appeared during the year, notably one by Loeb, dealing with some of the mechanistic conceptions of life, while the attractive book by Darbishire, gives in simple, effective terms and illustrations the pith of the present neo-Mendelian situation. A larger field is covered by the composite work by Coulter, Castle, East, Davenport and Tower, dealing with the materials of present investigations by some of those active therein. Lloyd has presented the arguments from the point of view of mutation regarding the origin of groups in nature, showing that a plausible showing for origin in nature can be made from this point of view. Davenport has given a first collection of the data of heredity in human families from modern aspects, especially in abnormal conditions of disease and unusual ability, that is suggestive and a real basis for eugenic discussions and operations.

The book is the outcome of investigations supported by Mrs. Harriman, and at present centralized in the Eugenics Record office, at Cold Spring Harbor, N. Y.

The year shows especially continued support in the major investigations of experimental evolution in America. Noteworthy in this respect are the continued support that is given projects dealing with different portions of the evolution problem by American institutions at the present time. At Harvard University, the University of Chicago, Columbia University, permanent projects, purely research in character, are maintained and supported, while many of the state universities and agricultural schools are supporting projects that are either purely investigation or the applications of present evolution knowledge to industrial uses. The Carnegie Institution of Washington, at its Station for Experimental Evolution, is actively attacking the problems of heredity, while the Desert Laboratory at Tuscon, Ariz., is making diverse investigations from the geographic aspect and undertaking extensive experimental investigations direct in nature, thus dealing with portions of the evolution problem not available for attack in most laboratories and not at all in laboratories.

Evolution Theories: Neo-Lamarckianism, as a broad hypothesis of transmutation, has received no contribution in its support, and its validity becomes increasingly doubtful. From the data of paleontology, Osborn concludes that because the grosser forms of Lamarckian interpretation of the transmission of acquired characters has been apparently

disproved, we must not exclude the possibility of the discovery of finer, more subtle relations between the germ plasma and the soma, as well as the external environment. This is entirely a matter for experimental investigation, and Brown seems to have made the most important test of the year in his investigation of the Brown-Sequard effect in guinea pigs, where he finds that the effect is the result of the raised excitability, of a mechanism already present, when inhibiting influences are removed by section of the sciatic nerve. Semon contributes another interpretative *résumé* of the current experimental investigations, and Harvey's translation of Rignano reveals only the *cul-de-sac* into which the adherents of this hypothesis are driven.

Neo-Darwinism, with its basic principles of survival per selection of useful variations, fares no better in the output of the year. The investigations center around the efforts to prove, first, the action, and second, the existence, of selection and modification on the basis of utility, and the investigation of elimination in nature as a means of explaining the production of many color patterns—protective resemblances in animals. The biometric operations center about the activities of Pearson, and their results appear in the main in *Biometrika*. Harris has continued his biometric investigations upon plants, especially the effects of starvation, and continues his criticism of the pure line hypothesis, while Pearl has written of the place and use of biometrics in biology. Manders finds that butterflies are eaten without regard to taste or discrimination, in supposedly inedible *Danaines*, disposing as far as his observations go, of the use of selection in mimetic forms. Use selection, or fittest survivals, seem increasingly to be less real than the essayists of a decade ago wished us to believe. Castle, working with guinea pigs and rats, finds that intensive selection in one direction produces modifications that are inherited, thus raising some interesting questions regarding the fixity of unit characters of which many have written so positively. The question whether intensive selection

in one character in one direction in experiment is the same as natural selection in nature remains open and uninvestigated. Experimental investigation of this problem in nature is badly needed.

Orthogenesis, as a force in evolution and a method of transmutation, receives even less consideration in the year, and remains the untested assumption, upon which fragmentary remains or the sequence of ontogenetic stages may be arranged for display in a finished exhibit, without further investigation. Its adherents are a diminishing band of workers in phylogeny and descriptive ontogeny. It is descriptive of a situation that should be investigated by analytical methods and not by the plausible juxtaposition of the facts of paleontology and ontogeny. Osborn seems to be the leading exponent of this hypothesis at present and concludes regarding the origin of characters that his studies upon the skull and horns of *Titanotheres* and of cattle, skull of man, and skull and teeth of horses give no evidence to him that indicates discontinuity in heredity and no evidence of discontinuity of origin. New characters arise by fine gradations which appear continuous, and if discontinuities exist are so minute as to be indistinguishable from fluctuations.

Mutation has become a by-word to describe everything that is separated by gaps from its apparent ancestor or is inheritable, and is fast becoming the term to describe an inheritable departure of any size, direction, or degree of complexity. *Oenothera* is still the object of many investigations, and noteworthy in the year are the attempts of Davis to produce *O. Lamarckiana* by the crossing of *O. grandiflora* with *O. biennis* in which a form resembling *O. Lamarckiana* results, but it remains to be shown that it has the mutating habit of De Vries stock. The production of *O. Lamarckiana* is one thing, a mutating stem form quite a different problem. This aspect of the problem is presented by Tower in preliminary statement, with an hypothesis of the origin of mutating stem forms as the product of complex synthesis by intercrossing in

which stem forms that are stable but mutate are produced experimentally. Gates and Lutz continue their studies on the crossing of *Oenothera*, and the determinations of the chromosome complex. Of especial interest is the account of the triploid mutants in *Oenothera* by Lutz. Numerous instances of mutations are announced in the literature of the year, and are significant only of reawakening of interest in evolution problems from the experimental aspect. Of interest in these announcements is that by Keeble in which a giant form arose suddenly in *Primula sinensis* from selected extremes. It breeds true and is sterile when crossed back upon parent. Size is due to large cells and three factors associated in the production of the change have been recognised.

Isolation and segregation, as forces in evolution or methods of the production of groups in nature, receive no additional evidence in their support or analysis of importance from any source.

Transmutation.—Transmutation hypotheses seem in a state of flux, in which the good is being tested out and the dross eliminated, but as yet no formulation of an inclusive hypothesis of transmutation that is fully in accord with the facts now available has been presented. The problems extend beyond the laboratory walls, and investigations by many men in diverse lines is needed at present to bring that refined understanding of the relations of organisms in nature, and of the origin of natural groups, before a satisfactory reformulation of evolution hypotheses will be profitable. Meanwhile there are working hypotheses for portions of the entire subject that are giving highly satisfactory results, apparently of permanent worth.

Phylogeny receives less attention than in the past, the younger workers being drawn into the experimental aspects of evolution. Most noteworthy in the year is the publication of Patton's work dealing with Ostracoderms, a none too well-known group of extinct forms. Only commendation can be expressed for the masterly work presented, and while

many will not accept the interpretation the author believes in, a most substantial residue of fact and desirable information is presented.

The Factors of Evolution.—The chief activities center around the experimental investigation of heredity and variation.

Variation.—Statistical investigations still claim the attention of Pearson and his co-workers, dealing mainly with measurable or seriated characters in higher organisms. Harris continues his investigations upon plants, and other lesser efforts occur scattering in the records of the year. Collectively the biometric workers have failed to recognize that the present condition in the evolution problem demands analytical investigation, and not the blendings of statistics, and throughout is the constant defect of regarding their materials as homogeneous without testing in any respect their nature. Populations are increasingly shown to be in all respects heterogeneous, and statistical theory supposedly demands for its proper application homogeneous arrays. The relation of fluctuations and mutations, especially in pure lines, is receiving increasing attention, and the tendency is to follow the practice of calling all variations that are not inherited fluctuations, all others mutations as does East, although many still adhere to the DeVriesian use of the terms and their application.

Heredity presents the greatest activity and some of the most definite advances. The Galtonian hypothesis receives nowhere contributions of any moment. The Galton Laboratory for National Eugenics is still collecting data of inheritance from this point of view, but the same data seems at present, as far as they are capable of analysis, to be more in line in its behavior with the principles of Mendel. The most noteworthy contribution from this group of workers is the investigation by Pearson and others of the heredity of albinism in the human race. The body of fact is remarkably extensive, and a good presentation of the facts is made. Not many, however, will agree with the interpretation accompanying the facts.

The conspicuous development of neo-Mendelism claims most of the investigators in experimental evolution, and an increasing number of titles are found in the literature of this subject each year. Collins has written of the phenomena of gametic coupling as a cause of correlations. East thinks that the Mendelism notation describes physiological as well as other characters, a conclusion based upon his experience with corn, tobacco nicotina and other plants. Emerson continues his investigations upon corn and other plants, Castle with guinea pigs and rats, Davenport in poultry, while Hays, Groth, Moore and many others give data from experimental tests showing the application of Mendelism methods of investigation to the problems of heredity, and the accuracy of formulation of the phenomena in Mendelian terms. Throughout one finds a too active tendency to introduce added factors whenever any difficulty is found instead of withholding publication until the cause of the condition can be tested. The conception of factors and determiners, the operation of these on the basis of presence and absence seems in the total results of the year to have gained materially in strength by the accrued data. No really non-Mendelian cases have been presented that are adequately investigated.

The inheritance of sex and the relation of sex to the problems of heredity continue one of the central topics in present investigations. The idea that the sex is determined at fertilization by the nature of the uniting gametes has in the year received continued support in the increasing number of instances of chromosomal differences that are being discovered and in the experimental confirmation of the same concept. No results have appeared that indicate that the sex can be modified after it is once established by the union of the gametes. Several good résumés of the entire subject of sex determination and inheritance have appeared, especially by Hertwig and Kammerer; and Wilson has, from the cytological side, added further data confirming his former observations and conclusions. Little doubt exists

of the reality of the difference of the male gametes into two classes in all sexually reproduced animals, but in plants no chromosome differences have been discovered. The problem of sex determination in plants is still open. In animals it seems approaching a solution, which may not be far distant.

Closely correlated with this is the discovery and further study of the instances of sex-limited inheritance. Of sex-limited inheritance Davenport, Cole, Dexter, Morgan, Little, Sturtevant, and others present numerous instances in mammals, birds and other organisms, all agreeing in the principle that the agent in the gamete that is productive of the character is in some way associated with, or linked to, the sex-determining agents, and may therefore often be limited to one sex. Differences exist in the application and terminology of the formula that are of no moment. This aspect of inheritance appears of much practical importance in the understanding of some of the conditions in hereditary disease, and in the examples given by Davenport, many of the conditions found are comprehensible only in the light of sex-limited inheritance.

The investigations of Morgan and his coworkers have brought to light a wealth of facts that show the linking of factors with the sex-determining agent in the gamete. Their placing it upon the accessory chromosome is only one of convenient location; no proof of such position is made. The investigations show more than any others thus far have done, the extensive array of factors in the gamete and the fact of their association in precise positions in the gametic system. It is of interest to find that this phenomenon, present in *Drosophila* of the stock that Morgan is using, has apparently not appeared in any of the other stocks of this fly that has been used by other workers. The problem of the initiation of the extensive series of losses of factors, and the rise of many inheritable departures from the normal awaits elucidation.

The inheritance of secondary sexual characters and the action of internal secretions thereon as usual

show the customary discussion in scattered papers.

Some of the general aspects of the heredity problems, in respect to the advances in cytology are discussed by Wilson, who is not convinced that characters can be traced to cell elements, though in some instances unit characters may in some way be connected with material substances. Determiners are thought of as differential factors in the ontogenetic reactions that belong to the germ cell as a whole. Cytological evidence at present would place most of the hereditary reactions within the scope of these bodies, the two gametes being of equal importance in the operations. Loeb, on the contrary, after crossing species of *Fundulus*, expresses his belief that fertilization is primarily and essentially artificial parthenogenesis, and as the result, the transmission of hereditary characters through the sperm is in many cases merely an accessory function. It (the sperm) becomes of vital importance only in those forms where the male is heterozygous for sex and where the species can only be propagated through sexual reproduction.

Selection is shown by Castle from experimental investigations to be able to modify a unit character quantitatively in either direction through a series of generations, showing the presence in the germs of quantitative variations, capable of accumulation, but to what extent has not been determined. Castle thinks that selection or like cumulative processes might be responsible for much change in nature without crossing or other agencies. The bearing of these experiments upon the unit character concept is pointed out. The statistical studies of the year have produced no new points of interest.

Eugenics.—Most noteworthy in this field is the appearance of Davenport's collection of the data of human families, which presents for the first time data from the human race that is in form to be analyzed. Apparently many of the pedigrees show inheritance in Mendelian fashion, the doubtful cases needing further investigation. The entire trend in this field in the year has been

to analyze the facts of human heredity in terms of Mendelian behavior, not always too wisely, but suggestive of problems for further study. The few contributions from the biometric school, present nothing new or useful. (See also XVI, *Eugenics*; XVIII, *Prevention, Correction, and Charity*; XXVIII, *Sociology*; and XXX, *Pathology and Medicine*.)

Experimental Evolution.—The efforts of the year center about two lines of investigation, to produce changes through the use of incident external factors, and to produce mutating stem forms. The experiments of Davis with *Oenothera* have been given (see "Mutation," *supra*), but failed to produce the mutating sequence of events present in the lines used by DeVries. Tower has shown in preliminary statement some of the results produced in the production of mutating stem forms. Complex stable races are produced by the free intercrossing in nature of two or three species. These breed true with little variation, but the mutating behavior may be initiated in any of these strains by external conditions. Several species of *Leptinotara* are used. Firth has independently investigated the modifying action of salts added to the water of the soil and also when injected into the ovaries of plants, and finds that in carefully pedigreed strains of *Oenothera* and in *Epidobium*, especially changes are produced by the injection of salts into the ovule that in some instances are inherited to the F₂ generation. The paper is apparently a preliminary announcement. His results duplicate and confirm, in action, in principle and results the investigations of MacDougal. Kammerer continues his studies upon the action of changed conditions in producing changes in Amphibia and reptiles, and Tower his on the action of incident agents to produce heritable changes in animals. The results are confirmatory of the general conclusions stated in previous publications.

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ZOOLOGY

DAVID HILT TENNENT

General Survey of the Year.—A survey of the researches in zoology completed during 1912 reveals a sustained enthusiasm in the study of genetics and a continued intensive consideration of the physical and chemical nature of the organism. The influence of thought along these lines is evident even in papers of the more strictly morphological type.

The volume of work published has been large and distributed, as usual, over a wide range of subjects. Although there has been an increased interest in the marine laboratories, the study of land and fresh-water forms has not suffered; this is due in part to the very timely work that is being done in the summer laboratories of some of our inland colleges and universities.

One interested in the work of the marine laboratories at Cold Spring Harbor, Harpswell and Woods Hole, may obtain information of their advantages and facilities from the prospectuses issued by these institutions and from reports published from time to time in *Science* and the *Biological Bulletin*; those wishing data concerning the laboratories of the United States Bureau of Fisheries, at Beaufort, Woods Hole and elsewhere, may find it in the report of the Commissioner of Fisheries; while information regarding the Tortugas laboratory of the Carnegie Institution may be found in the year book of the Carnegie Institution of Washington, published each year in January. An exceedingly interesting and useful account of the marine biological station of San Diego has been given by Ritter⁷. Two important expeditions have been made by the Department of Marine Biology of the Carnegie Institution during the year; one to Jamaica, the other to the Bahamas.

During the year several publications of a somewhat general interest have appeared; among them may be mentioned the *Proceedings of the Seventh International Zoological Congress*, held in Boston in 1907, printed by the University Press, Cambridge, and *Verhandlungen des VIII Internationalen Zoologen Congress*, held in Gratz in 1910 (Fischer, Jena). Both of these contain numerous abstracts of papers given by American zoologists in these two congresses.

An event of more than national interest has been the celebration of the one hundredth anniversary of the founding of the Academy of Natural Science of Philadelphia. Abstracts of papers given at this meeting appear in the *Proceedings* of the Academy, Volume LXIV, Part I, while the papers in full are to be published in the commemorative volume of the *Journal of the Academy*.

An exceedingly valuable contribution to the zoological literature of the year is that of Jackson⁸ on the "Phylogeny of the Echini," which will become increasingly useful to those interested in modern echinoderms. The publication of *The Evolution of the Vertebrates and their Kin* by Patten (Blakistons) marks the completion of a long continued and careful research.

Child's⁹ contribution to the subject of reproduction in organisms, based largely upon his own investigations during the past ten years, seems destined to cause discussion. Child expresses the feeling which is behind the growing reaction of a large number of zoologists against the mass of involved speculation which has grown up around the germ-plasm hypothesis, and urges a return to the consideration of facts, both those which are in accord and those which disagree with the pres-

ent trend of biological thought. That the unrest in this particular field has a counterpart in other lines of investigation, is shown by the re-investigation of many zoological problems that have very generally been considered as solved. There has come a sober realization of the fact that a name for a process is not an explanation, nor the model of an organism, an organism.

The literature of the year discussed in this *résumé* is chiefly that of zoology, although mention is made of researches in physical and physiological chemistry which are of especial interest to zoologists.

Taxonomy.—During the year the results of many investigations based on material collected by various expeditions have been published. The references given are by no means exhaustive. Further information may be found in the memoirs of various societies and in the bulletins and reports issued by national and state institutions.

Garman,²³ Barbour,⁴ Thayer and Bangs²⁴ and Allen¹ have made available much of interest regarding Chinese vertebrates. Barbour⁴ has brought out much information regarding the zoogeography of the East Indian islands. Eigenmann¹² has given a splendid consideration of the fresh-water fishes of British Guiana, with a study of the ecological grouping of species. Cory,¹⁷ in a work of considerable local value, has given a systematic consideration and a key to the mammals of Illinois and Wisconsin. Swarth²⁵ has contributed a similar report on birds and mammals from Vancouver Island. Ruthven¹⁸ has made further information regarding the amphibians and reptiles of Mexico available. Fraser's²² treatment of the hydroids of Beaufort will be useful to workers in that region. H. L. Clark¹⁴ has added to his long series of papers on the echinoderms one on Hawaiian and other Pacific *Echini*. Mayer²⁶ has given a much needed account of the Ctenophore fauna of the Atlantic coast of North America. Osborn²⁸ has presented the results of his study of the *Bryozoa* of the Woods Hole Region; Berry¹ has made accessible a large amount of material

on the aphanopods of western North America, and Rathbun²⁷ has added to her useful work on the *Crustacea* by a consideration of Cuban forms.

Morphology.—Andrews² has added to his series of studies on the crawfish an account of the manner in which the female spiny lobster *Panulirus*, and the "sea cockroach," *Paribacus*, carry masses of spermatophores on the underside of the thorax, and of the specialized claws which are possibly used in releasing the sperm at the right time to meet the eggs. Ferguson²⁹ has studied the origin of connective tissue cells, the formation of fibers and of bundles in the fins of living fish. Jackson³⁰ has determined that sex in young rats may be recognized by the anogenital distance, which is much greater in the male than in the female. Jordan and Steele³¹ have demonstrated intercalated discs in the heart muscle of some 17 forms, finding such discs in all of the forms studied with the exception of *Limulus*. Kepner and Taliaferro³² have shown that the sensory epithelium in the pharynx and ciliated pits in *Microstoma caudatum* functions in testing the surrounding medium. Kofoid and Rigden³³ have discovered an unusual method of a sexual reproduction (schizogony) in *Gonyaulax*, resulting in the formation of a linear chain. Osborn²⁸ has described the structure of *Clinostomum marginatum*, a trematode parasite of the frog, bass and heron. MacFarland³⁴ has given the classification and an account of the general morphology of the nudibranch family *Dironidae*. Pearl and Curtis³⁵ have reinvestigated the formation of the albumen, membranes and shell of the egg of the domestic fowl. They have shown that the yolk remains in the albumen part of the oviduct for about three hours, during which it acquires 40 to 50 per cent. by weight of the total albumen; in the isthmus for about one hour, where the shell membranes are acquired; and about the same length of time in the uterus, where the thin albumen is taken in through the shell membranes by osmosis. Bullard³⁶ has made a comparative study of different regions of the spinal cord in a long series of mam-

imals, and Sheldon⁷ has given an excellent account of the olfactory tracts and centers in Teleosts. Tilney⁸ has demonstrated a similarity between the venous organization of the ruminant ungulate *Tragulus meminna* and that of marsupials. Lowley⁹ has found that the middle lobe of the prostate gland in man is made up of tubules originating in the floor of the urethra. It is an independent structure which may be lacking. Wilder¹⁰ has contributed a careful investigation of the anatomical details of the adult limbs of *Necturus*. Young¹¹ in reconsidering the much discussed question of the origin of the epithelium in flatworms has presented evidence of the transformation of a true epithelium to a condition in which the epithelium has been replaced by a cuticle.

Embryology.—Some of the contributions in embryology are especially welcome since they deal with debated questions. This may be said concerning the work of Bremer¹² and Clark¹³. Bremer has shown that in the rabbit the primary blood vessels arise from a network of "angioblast cords" (solid outgrowths), derived from the extra-embryonic plexus of blood vessels, while Clark has determined that in the frog tadpole the growth of lymphatics is independent of the mesenchyme cells. New lymphatic protoplasm and nuclei are formed by the extension of preëxisting lymphatic endothelium.

Lewis¹⁴ has given careful consideration to the development of the form of the stomach in human embryos. Mall¹⁵ has described the location of the atrio-ventricular muscle bundle in all stages of the development of the human heart, and has followed the course of the development of the musculature from the circular muscles of the heart tube. Essick¹⁶ has shown the origin of the gray matter found on the ventral surface of the adult rhombencephalon in man to be from the rhombic lip. The cells of the arcuate and pontine nuclei arise around the attachment of the roof of the fourth ventricle and migrate through definite paths to their proper places.

Several investigations deal with the earlier stages of development in

various forms. Bartelemex¹⁷ has found that in the pigeons egg bilaterality may be traced back in the ovarian history as far as the youngest oocytes in the adult ovary. Just¹⁸ has given experimental proof that in the egg of *Nereis* the first cleavage furrow passes through the sperm entrance point; this idea, which has been held by many embryologists, now being confirmed. Mark and Long¹⁹ have devised methods and apparatus for obtaining the living eggs of rats and mice which will prove of great importance in the experimental field. Newman²⁰ and Patterson²¹ have continued independent observations on a subject in which they formerly collaborated. Newmann's study of the oögenesis and of one fertilization stage of the nine-banded armadillo gave further evidence that the quadruplets of this form are derived from a single fertilized egg. Patterson has studied a series of early stages of development and has discovered that the embryos arise as the result of budding in the embryonic vesicle. Patterson²² in an investigation of a similar problem in the development of the viviparous rhabdocoel *Graffilia gemellipara* has found that the two embryos, commonly found within a capsule, arise from two eggs and are not the product of a single fertilized egg. Riddle²³ has shown that in the hen, true yolk may be found in the connective tissue which lies externally to the follicular membrane of capsules which have previously liberated ova. Smith²⁴ has given an excellent account of this oögenesis, maturation and fertilization, and of the general embryonic and larval development of *Cryptobranchus*. Leffevre and Curtis²⁵ in a paper of much scientific and economic value have presented an account of the reproduction and artificial propagation of fresh-water mussels.

Cytology.—Many of the papers mentioned under the other headings contain a record of observation on cell structure. Those considered in this section deal chiefly with this subject alone. Conklin²⁶ has made a notable contribution to the literature on the "kern-plasma relation." He has shown clearly that in *Crepidula* the growth of chromatin during

cleavage is not as great as has been assumed by some investigators from a study of echinoderm eggs, being an increase of about 8 per cent. for each division period from the two- to the 32-cell stage, instead of an increase in geometrical ratio. He has also shown that the volume of cytoplasm more than doubles between the one-cell and the 24-cell stage, the growth being at the expense of the yolk. Conklin¹⁸ has also shown that in different races and species the important factor in determining body size is the duration and rate of cell growth and cell division. Within the same species differences in body size are due to differences in cell number, the size of cells being approximately constant.

Lillie¹⁹ has concluded that the action of the spermatozoan in fertilization involves two distinct phases, the first being a sudden and marked increase in permeability of the egg membrane, the second consisting essentially in the establishment of normal interchange between nucleus and cytoplasm.

Boring²⁰ in a study made for the purpose of determining the cause of the appearance of secondary sexual characters in the male of the domestic fowl has reached the conclusion that these cannot be caused by an internal secretion of the interstitial cells of the testis, since there is no evidence of an internal secretion by any cells of the interstitial tissue. Guyer²¹ has determined that in his sterile guinea chicken hybrids no spermatozoa are developed in the testes; the seminiferous tubules are few in number. Whitehead²² has shown that the granules in the interstitial cells of the testis in the pig, and probably also of the cat, consist of a combination of proteid with fatty material. He has concluded that it does not seem possible that the mitochondria of the sex cells of the pig and cat can be identified with the granules in the interstitial cells. Montgomery²³ has concluded from his study of *Peripatus* that since the mitochondria are thrown off by the spermatozoa during development, the idea of direction of cytoplasmic activities by

mitochondria should be held with caution.

Hegner²⁴ has traced the history of the germ cells in the paedogenetic larvae of *Miastor*. Metcalf²⁵ has described a striking occurrence in the mitosis of *Opalina mitotica* in which the nuclei "rest" in the midst of mitosis. Kite and Chambers²⁶ have shown that a promising application of vital staining methods may be made in the study of chromosomes.

Munson²⁷ in a full paper has reviewed the literature on the vitelline body and has made many new observations. He has shown that the true yolk nucleus (vitelline body), is a centrosphere derived from the centrosome of dividing oögonia.

Papers by Morgan, Payne, Stevens, Tennent and Wilson deal with various phases of the activities of chromosomes. Morgan²⁸ has determined that a lagging chromosome present in the male producing egg of *Phylloxera* passes to the outer pole of the spindle and forms a separate vesicle in the polar body. Payne²⁹ has made a further study of the chromosomes of the *Reduviidae*. Stevens³⁰ has described parasynapsis in the young spermatocytes of *Ceuthophilus*. The chromosomes twist together in parasynapsis and untwist in the prophase of the first maturation mitosis. She has concluded that in this form the first maturation division is a segregating division of previously paired and united homologous, univalent chromosomes. Wilson³¹ through his study of *Batrachoseps* and *Tomopteris*, has convinced himself that synapsis, and in these animals, parasynapsis, is a fact, but he does not feel that it has yet been demonstrated that the reduction division consists in the disjunction of the same chromosomes that unite in synapsis. His critical consideration of maturation phenomena should do much toward bringing about a thoughtful reconsideration of facts and hypotheses in this field.

Tennent³² has shown that dimorphism among *Toxopneustes* spermatozoa exists and that there is a correlation between chromosomes and visible characters in hybrid echinoid larvae.

Experimental Zoology.—Many ex-

perimental studies have been based upon the protozoa. Baitsell¹ has concluded that his experiments show conclusively that conjugation in *Stylonichia* is induced by external conditions affecting the organism, and that it bears no relation, in this form at least, to a particular period of the life cycle. Watters² in a study of *Blepharisma* has reached conclusions similar to those of Jennings and Pearl regarding the size relationships of conjugants and non-conjugants in *Paramoecium*. Peebles³ has shown that when *Paramoecium* is cut transversely, the nucleated fragment may regenerate the lost part. Some individuals grow to the original size before division; some divide earlier in the original plane. She did not succeed in obtaining a small race by removal of a portion of the cytoplasm.

Woodruff⁴ has produced a distinctive contribution in his work on the sequence of the protozoan fauna in hay infusions. He has shown that air, hay and water are all sources from which the protozoa of infusions are derived; the observations tend to confirm the idea that some amoebae appear as amoeba flagellates, which gradually increase in size and finally assume the form of the typical amoeba *Proteus*. Fine⁵ has shown that the acidity of hay infusions is essentially due to bacteria. Protozoa play only a small part in the production of acids. The sequence of protozoa and the course of titratable acidity in a culture possess no intimately mutual relation. Jacobs⁶ has concluded that different species of protozoa show a characteristic reaction and resistance to CO₂. The general effects of CO₂ are to cause cessation of movement, absorption of water and subsequent swelling, injury to the cell wall, death and coagulation of protoplasm.

A large number of papers deal with the effect of an altered environment on the organism. King⁷ has found that there is some evidence that sex in amphibia can be influenced by decreasing the water content of the egg, at or before the time of fertilization. King⁸ has shown that solutions of amino acids can alter the rate at which eggs of

Arbacia and *Chaetopterus* develop, but have no influence in determining the character of the development. Nice⁹ has determined that the fecundity of alcohol, nicotine and caffeine treated mice, and mice subjected to tobacco fumes is greater than that of mice not so treated, but that the young of the drugged mice have less vitality than those of the untreated control series. Rau and Rau¹⁰ have shown an influence of climatic conditions in determining the length of life of *Saturnid* moths. Stevens¹¹ has suggested that the erratic sex ratios in collected *Diabrotica* material may be an example of a shifting of a normally equal sex ratio or the partial exclusion of one sex by peculiarities in the environment.

Shull¹² and Whitney¹³ have continued their work on *Hydatina senta*. Shull has concluded that whether a female is to be a male producer or a female producer is decided in the growth period of the parthenogenetic egg from which the female hatches, by chemical substances supplied during that period. Whitney¹⁴ has determined similarly for the general problem, i. e., that the production of male-producing females can be partly or wholly repressed by external conditions. He has also concluded that parthenogenetic races may be distinct because under identical external conditions they differ in their power to produce male-producing females. Whitney¹⁵ has also shown that cross breeding between distinct sister parthenogenetic races which show decreased vitality may cause a sudden and very pronounced increase in the reproductive rate of the ensuing race.

Child¹⁶ has been led to the conclusion that we must interpret regulatory phenomena in terms of dynamic processes rather than in terms of morphology. Hargitt¹⁷ has shown that the torsions of the tubes in tubiculous annelids may be due to movements of readjustment, the natural expression of "trial movements," rather than those of tropisms. Loeb and Bancroft¹⁸ have shown that the spermatozoa of the domestic fowl may be caused to undergo transformation into a nu-

cleus in yolk and white of egg. How much further such a development of a spermatozoan may be carried is problematic in the light of the facts known of the fate of supernumerary nuclei in the pigeon's egg and in the eggs of selachians. Morgulis⁷⁷ has continued his studies on inani-tion. Morse⁷⁸ has shown that the eggs of *Cerebratulus* are refractory in re-sponse to methods which induce arti-ficial parthenogenesis in eggs of other forms.

In a field rather closely allied to this are the papers of Loeb, Lillie, McClendon and Robertson. Loeb⁷⁹ has considered the comparative ef-ficiency of work and strong bases in artificial parthenogenesis; Lillie⁸⁰ the antagonism between salts and anaesthetics. Various anaesthetics prevent or retard the toxic action of sodium-chloride solutions on the cilia and muscles of *Arenicola* larvae; similarly with *Arbacia* and *Asterias* eggs, anaesthetics retard the toxic action of pure isotonic solutions of sodium and potassium.

McClendon⁸¹ has reviewed the lit-erature, and has given original ob-servations on the tension phenomena of living elements. This same au-thor⁸² in attempting to elucidate the physical chemistry of the production of cyclopean *Fundulus* embryos, has found a partial explanation in the CO₂ content of the water. McClen-don⁸³ has also considered the efficacy of mechanical and electrical stimula-tion in causing artificial parthenoge-nesis in frog's eggs. McClendon and Mitchell⁸⁴ have urged that in-creased alkalinity causes increased permeability, and that the primary effect of many toxic substances is an abnormal increase in the permeability of the egg. Fertilized eggs are re-garded as being more susceptible be-cause they are more permeable than unfertilized eggs. McClendon⁸⁵ has also advanced the idea that the di-vision of an egg is due to a relative increase of surface tension at the equator, thus opposing the idea of Robertson that decrease at the equa-tor will divide a drop.

Robertson^{78 79 80} in considering the fertilization of eggs of the sea ur-chin by blood sera, has concluded that a fertilizing agent (which he

terms oöcytin), in shed blood is de-rived from disintegrating corpuscles, and is not present in circulating blood. According to his idea, when spermatozoa are washed in $\frac{3}{8}$ M. Sr Cl₂ solution, and then in blood serum, they gain an added potency in fer-tilizing, having gathered an extra charge of oöcytin, which they carry into the egg. Robertson has also described the extraction of the fer-tilizing agent in spermatozoa. The substance which he has obtained is insoluble in sea water, soluble in di-lute acids or salt solutions, precipi-table by barium chloride, strontium chloride or acetone. The work is sug-gestive and may lead to definite re-sults. In its present form it is merely an interesting fact.

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BOTANY

MORPHOLOGY AND PALEO-BOTANY

JOHN M. COULTER

The intimate relation between paleobotany and the morphology of vascular plants has been increasingly emphasized during 1912. Morphology is now chiefly concerned with questions of phylogeny, and the facts accumulated seem to be valued in proportion to their significance in suggesting genetic connections. Since paleobotany includes the facts of plant history, it is really an extension of morphology into the past.

Angiosperms.—The older morphology, dealing chiefly with the reproductive structures, was naturally interested in the so-called primitive angiosperms, as likely to reveal some information concerning the origin of the group. Among the last of these reputed primitive forms to be studied was *Leitneria*, a shrub growing in a few localities in the southern states. Superficially it gave great promise; but actually it has now shown nothing more than the primitive features that belong to several angiosperms already studied. This

is very likely to be the last investigation of a primitive angiosperm along the old lines.

The new phylogenetic field among angiosperms is the vascular anatomy, and during 1912 it was cultivated with increasing intensity. Numerous papers have appeared dealing with the vascular structure of dicotyledons, the great group of angiosperms, and especially with the structure of the pith (medullary) rays. These rays show varying degrees of complexity in different plants, and the attempt is being made to arrange these variations in phylogenetic sequences, not only by comparison, but also by experiment. Such plants as oaks, willows and many others have been studied, and it is obvious that the old ideas as to relationships among dicotyledons will have to be modified. For example, the older morphology has placed the willows in a very low rank among dicotyledons, but the vascular structure suggests that they should be placed high in the series. The difficulty of interpretation is increased from the fact that there are not only ascending series of forms, advancing from the simple to the more com-

plex, but also reduction series, advancing from the more complex to the simple. In all of this work, paleobotany has been called upon continually for evidence, and theoretical sequences have been checked by actual sequences.

Gymnosperms.—The work on cycads has continued, and during the year a paper was published on *Cera-tozamia*, a cycad peculiar to Mexico. The other peculiar Mexican genus is *Dioon*, and two papers concerning it were published in 1911 (See AMERICAN YEAB BOOK, 1911, p. 652.) The paper of 1912, therefore, completes the account of the endemic Mexican forms. The chief event of the year in reference to cycads is the discovery by Chamberlain (Chicago) of a cycad, *Macrozamia*, which is evidently a relict from Mesozoic times, in a little visited region of Australia. It is almost extinct, and is being destroyed rapidly by the inhabitants on account of its poisonous nature, but it has the conspicuous features of the so-called "fossil cycads" of the Mesozoic, which are now called Bennettitales, and which were thought to have become extinct long ago. The announcement of the discovery has just been made, and the detailed study of the material will follow.

One of the current questions among gymnosperms is the relative ages of the tribes of conifers, and it is a question that is being answered by vascular anatomy and paleobotany, and chiefly by Jeffrey and his students (Harvard). The two real competitors for priority of age are the pine tribe (Abietineae) and the araucarians of the southern hemisphere. The evidence for the claim of the Abietineae as the most ancient conifers seems to be satisfactory from the standpoint of vascular structure, and this evidence has increased during 1912. It is an interesting fact that in tracing the sequences of vascular changes among the Abietineae one deals largely with reduction series, that is, the advance has been characterized largely by increasing simplicity. The discovery of this fact has led to many unexpected reversals of opinion as to the sequences of phylogeny. The evidence of paleobot-

any upon this subject, however, is not so clear as it was a year ago. No one questions the occurrence of Abietineae well through the Mesozoic, and the claim for their occurrence at still lower horizons has been based upon certain forms of the Permian and Carboniferous. The vascular structures of these forms have now been investigated, and their connection with Abietineae is not established by critical study. The result is that it remains an open question whether the Abietineae extends into the Carboniferous. In a notable paper, however, Jeffrey demonstrates, as near as such things can be demonstrated, that the araucarian wood-structure has been derived from that of the ancient Abietineae.

Pteridophytes.—The notable American paper of 1912, dealing with pteridophytes (ferns and their allies) is that by Sharp (Chicago) on *Equisetum*. It deals with spermatogenesis, and the chief result is to establish definitely the relationship between centrosomes and blepharoplasts, two structures of the cell found in different groups of plants. In general, lower plants have centrosomes (associated with cell-division) and many higher plants have blepharoplasts (producing the cilia of swimming sperms). It has been a question for discussion whether the two structures are phylogenetically related, but the investigation of spermatogenesis in *Equisetum* showed centrosomes in form and function gradually passing into blepharoplasts with different function.

Bryophytes.—Remarkable advances were made in our knowledge of the bryophytes (liverworts and mosses) during 1912. The most important paper deals with spermatogenesis in a moss (*Polytrichum*), and is by Allen (Wisconsin). This may be regarded as the first critical work on the cytology of mosses, and it is full of facts and suggestions. Several other papers on the spermatogenesis of both liverworts and mosses also appeared, and this long neglected field of cytological investigation has at least been fairly opened.

Revived interest in the liverworts is also evidenced by the careful morphological studies of *Aneura* and *Tar-*

gionia by Clapp and Deutsch (Chicago).

Algae.—The large interest in the morphology of algae (seaweeds) has centered about the rapidly increasing evidence for the distinct alternation of generations among the red seaweeds. Several papers have appeared that indicate a far wider range in this habit than was at first suspected. In some cases the alternation involves two individuals so unlike in appearance as to have been described as distinct genera. The basis for all this work has been a series of continuous cultures and detailed cytological investigation. The notable paper of the year, appearing in December, is by Yamanouchi (Chicago), in which he demonstrates that *Outleria* and *Aglaozonia*, two genera of the red algae, are the alternating generations in a single life-history.

Fungi.—Perhaps the most notable American contributions during 1912, to our knowledge of fungi, are those dealing with the life-histories of the rusts, a most polymorphic group. Arthur and Kern (Purdue) have developed methods for connecting the very dissimilar stages that have proved most successful, and a remarkable number of completed life-histories is announced each year. The whole question of sexuality in the group to which the rusts belong (Basidiomycetes) is also attracting much attention, but the larger part of the work upon this subject during 1912 was foreign.

PHYSIOLOGY AND ECOLOGY

B. M. DUGGAR

Physiology.—Viewing as a whole the publications, discussions and general trend of interest in the field of physiology, it is more and more evident that the problems now receiving most consideration in the United States as well as in Europe, are those in which quantitative measurement is the method and causal relations the goal. Those with a broad grasp of the general subject are sure that the time has not arrived when the mere description of living phenomena is superfluous; for

several phases of the subject have scarcely been dignified by serious and accurate description. Nevertheless, quantitative study is uppermost, as a result of the work already accomplished, and of the better preparation of the physiologist for the broader field—the field in which the explanations of living phenomena are sought in terms of known or experimentally approachable chemical and physical changes.

From the articles published and the thesis abstracts reported for the year, it would seem that substantial contributions have been made in many phases of the subject. That phase in which the least effort has been expended is growth movements, a division of the field, which in Europe is as well cultivated as the biochemical or the biophysical. This difference is perhaps explainable on the ground that in Europe utilitarian ends are not such an important factor in the choice of a topic. On the whole, in America no science is closer to practical interests than is physiology; and it is certain that the hope for effective investigation work in the plant side of horticulture and agronomy must be through physiology.

The literature of the year is too extensive for citation in this limited space, but among the topics investigated should be noted penetrability and osmotic relations; the water balance, wilting coefficients, and transpiration; antagonistic action, the relation of fertilizers to toxic soil compounds, and the rôles of the mineral nutrients; nitrogen "fixation," the absorption of organic nitrogen by rooted plants, and the nitrogen relations of micro-organisms, the effects of carbon dioxide and other gases on the ripening and on the respiration of fruits, the heat of respiration, and the oxygen minimum; certain relations of parasitic bacteria and fungi to their hosts; various enzyme processes; and considerable work in physiological cytology and genetics. Of special interest in relation to the physiology of growth is the discovery by Erwin F. Smith of typical metastasis in crown gall, a common plant gall, or tumor. In this case, as in human cancer, the

infection strand of host tissue differentiates cells characteristic of the tissue of primary infection, hence independent of the tissue invaded. (See also XIX, *Diseases of Plants*, and XXVI, *Agricultural Chemistry*, and *Biological Chemistry*.)

Approaching the subject of physiology incidentally, from the field of pure or applied chemistry, numerous contributions have appeared. Mention may be made here of two books, especially interesting and welcome from the standpoint of the soil relations of plants. F. L. Cameron's book, *The Soil Solution, The Nutrient Medium for Plant Growth* (Chem. Pub. Co.), is a strong presentation and use of data developed largely through investigations at the Bureau of Soils. In general, little value is attached to the "plant food" theory of the value of fertilizers. The importance of toxic substances in the soil as a cause of infertility is treated in a broader way than in the earlier reports. L. L. Van Slyke's book on *Fertilizers and Crops* (Orange Judd Co.), encompasses a large amount of chemical data and agricultural experience valuable to the practical man as well as to the physiologist. (See also XXVI, *Agricultural Chemistry*.)

Ecology.—Investigations along the line of vegetational ecology continue to yield an extensive array of data. The text-book of *Ecology* by Cowles (Amer. Book Co.) will receive the hearty approval of botanists generally for its force and accuracy. In this book there is given a comprehensive exposition of the relation of different members of the plant to environmental factors. It is a practical return to the idea of the greater fundamental value of analytical ecology, and therefore insures physiological contact and support. The newer text-books, intended for use in secondary schools, show a strong tendency to introduce more work in experimental physiology or ecology and agriculture, and to subjugate morphological study. This innovation may prove a blessing, since high school work in botany on the old basis has not proved sufficiently satisfactory as an approach to the general subject.

TAXONOMY AND ECONOMIC BOTANY

GEORGE T. MOORE

From the long list of monographs and descriptions of new species of plants which have appeared during the year 1912, the following have been chosen as indicative of the scope rather than the amount of this sort of work being done in America.

Seed Plants.—Particular attention has been paid to the far western flora. Part 3 of "A Flora of California," by Hitchcock, devoted to the grasses, a continuation of "Studies on the Rocky Mountain Flora," by Rydberg in the *Bulletin of the Torrey Botanical Club*, and "Contributions from the Rocky Mountain Herbarium" by Nelson in the *Botanical Gazette*, have appeared. Flora of more definite regions, such as the Ruby Mountains by Heller, in *Muhlenbergia*; the Yosemite, by Hall (University of Cal. Pub.); the ferns and flowering plants of Nantucket, by Bicknell (*Bull. Torrey Bot. Club*); of the Boston district (*Rhodora*); the flora of Northampton Co., Pa. (*Torrey*); Stone's "Flora of Southern New Jersey" (*Ann. Rep. N. J. State Museum*), and the "Grass Flora of Tolland, Col." (*Univ. of Col. Studies*), appeal to the specific demand which is increasing for such work. Rydberg continues his list of plants collected on the Peary Arctic Expedition (*Torrey*); Britton his studies of West Indian plants (*Bull. Torrey Bot. Club*), and Brandegee his "*Plantae Mexicanae Purpusianae*." In the *Proceedings of the American Philosophical Society*, Vol. 51, appears a "Classification of the Black Oaks" by Trelease, while Miller and Standley in *Contributions from the U. S. National Herbarium* monograph the N. A. species of *Nymphaea*. The Philippine flora is gradually being worked up, most of the papers appearing in the *Philippine Journal of Science*. Part 2 of Vol. 17, of the *North American Flora*, containing a part of the *Poaceae* by Nash has been issued. The 22nd *Report of the Missouri Botanical Garden* contains a continuation of Griffiths' "Illustrated Studies in the Genus

Opuntia," the second contribution by Sargent on "*Crataegus* in Missouri," as well as two papers by Trelease on *Agaves*.

Trees.—The second volume of the *Bradley Bibliography* (Pub. of the Arnold Arboretum), a guide to the literature of the woody plants of the world, published before the beginning of the twentieth century, is a notable addition to this field of literature. An illustrated key to the wild and cultivated trees, by Collins and Preston, adds another book to this popular field, while *Minnesota Trees and Shrubs* (Univ. of Minn.) is of more limited application. Darling (*Torrey*) contributes a key to be used in identifying trees in autumn, and Hall (Univ. of Cal. Pub.) in his studies in ornamental trees and shrubs pays particular attention to the Bottlebrush group of ornamentals besides discussing a considerable number of miscellaneous species.

Ferns and Mosses.—In addition to the more or less popular discussion of these groups in such publications as the *Fern Bulletin*, and the description of isolated species, there have been a considerable number of more elaborate treatments of special groups. Maxon (*Contr. U. S. Nat. Herb.*) continues his studies of "Tropical American Ferns," Miss Robinson (*Bull. Torrey Bot. Club*) contributes a "Taxonomic Study of the Pteridophytes of the Hawaiian Islands," and Miss Broadhurst (*Bull. Torrey Bot. Club*) begins a monograph of the genus *Struthopteris* and its representatives in North America. New and interesting ferns of the Philippines are described by Copeland (*Phil. Jour. of Science*). The *Hepaticae* of Porto Rico (*Bull. Torrey Bot. Club*) as well as those of New England (*Rhodora*) are reported by Evans, while numerous minor notes on the mosses of special regions have appeared.

Fungi.—In the *North American Flora* has appeared a continuation of the *Aecidiaceae* by Arthur, with the genus *Gymnosporangium* by Kern. Murrill begins a monograph of the *Agaricaceae*, *Polyporaceae* and *Boletaceae* of the Pacific coast, and continues his *Agaricaceae* of tropical North America, both in *Mycologia*.

In the same journal are a number of mycological papers of interest, including many of taxonomic importance. The *Agaricaceae* of Ohio are treated by Stover (*Proc. Ohio State Acad. Sci.*), and C. G. Lloyd has published a synopsis of the stipitate polyporoids. The botanical literature of the *Myxomycetes* from 1875 to 1912 by Sturgis (*Colorado Col. Pub.*) indicated how much attention has been paid to this group by botanists. The workers on the lichens in this country are few, but several important systematic treatises have appeared.

Algae.—A supplementary paper to Collins' "Green Algae of North America" brings this group up to date (*Tufts College Studies*), and Setchell in *University of California Publications* begins a series on new or little known algae dealing in Part I with red algae exclusively. A preliminary list of the algae of Colorado by Robbins, appeared in *Studies of the University of Colorado*.

Economic Botany.—Publications pertaining to this branch of botany have been confined chiefly to tropical regions. Philippine hats, mats and allied industries, Indo-Malayan woods, and the sugar industry are all treated at length in the *Philippine Journal of Science*. A work of much value to the veterinarian, physician and layman is Pammel's *Manual of Poisonous Plants*, which treats exhaustively of plants injurious to live stock and man. Smith continues his studies in crown gall, and in *Bulletin* 255, Bureau of Plant Industry, he devotes particular attention to the peculiarities of this disease which place it in a class by itself, the category of true tumors. Chlorosis in plants is being studied by a number of investigators. It has been found that two or more per cent. of carbonate of lime in the soil contribute to the occurrence of chlorosis in pineapples, and that chlorosis can be induced in maize by a number of causes, among them are excess of lime, the absence of sulphur and iron, etc. The usual number of government publications have appeared, relating to the economic side of forestry, forage and other crops. (See also XIX, *Diseases of Plants*.)

PALEONTOLOGY

CHARLES R. EASTMAN¹

Progress in the two main divisions of paleontology, vertebrate and invertebrate, has continued to be very satisfactory. An event of prime importance, calculated to stimulate research, both at home and abroad, is the formation during the past summer of a German Paleontological Society, under the leadership of Dr. Otto Jaekel. The earlier formed sister society in this country has amply justified its existence, as shown by its increased activity from year to year.

Invertebrates.—As in preceding years, chief interest centers in the surprising wealth of exquisitely preserved material discovered by Dr. C. D. Walcott in the Burgess shale horizon (Middle Cambrian) of British Columbia, and in this author's investigation of Cambrian fauna generally. Our knowledge of primordial forms of life has been greatly extended as a result of fresh contributions that have appeared during the year (*Smithson. Misc. Coll.*, Vol. 57), and field operations conducted during the summer months. A novel view-point is Dr. Walcott's interpretation of various problematical remains as annelid trails. Paleozoic Bryozoa have received renewed attention, both in this country and in Europe. Of special importance are Dr. R. S. Bassler's revision of the early bryozoan fauna of the Baltic Provinces, and E. R. Cumings' studies of the development of Monticuliporoids.

The structure and relations of Paleozoic Echinoderms have engaged the attention of various students, prominent among whom are F. Springer and A. H. Clark, on Crinoids, G. H. Hudson on Pelmatozoa and Asteroids, Prof. and Miss Solas on Ophiuroids, and R. T. Jack-

son on Echini. A splendid monograph by the last-named, entitled *Phylogeny of the Echini* (Mem. Boston Soc. Nat. Hist., Vol. VII), is acknowledged to be of epoch-making importance. Not inferior in character is the handsome volume on Eurypterids, by Drs. J. M. Clarke and R. Ruedemann, which forms No. 14 of the N. Y. State Museum Memoirs. The two monographs just referred to are superbly illustrated, and are invaluable for the information they contain regarding their respective themes. Much descriptive work has been done on the group of Cephalopods, especially by H. Douville in France, and J. P. Smith in this country.

Vertebrates.—The year has witnessed much activity and steady progress in this department of paleontology. Turning first to foreign countries, it is to be noted that the quarries and sandpits of central Europe continue to yield from time to time fine skeletons of marine reptiles, pterodactyls, dinosaurs and Tertiary mammals; and a mammoth skeleton from Würtemberg, recently mounted in the Stuttgart Museum, is said to be the equal of the famous Durfort (Gard) mammoth in the Paris museum. In India the fossiliferous strata have been reinvestigated, a succession of faunal zones has been determined by Dr. Pilgrim, and our knowledge of the older extinct fauna has been increased by the addition of many new forms (*Paleont. Indica*, n. s., Vol. IV, Mem. 1 and 2). In South Africa renewed explorations by Broom and Watson have yielded a large series of novel types of the ancient reptilian fauna, and in Australia important new discoveries of extinct Pleistocene mammals are reported, although their Tertiary predecessors still remain almost wholly unknown.

A fine series of fossil mammals from the Upper Eocene and Miocene of Patagonia, secured by an expedition from Amherst College, includes two nearly complete skulls of *Pyrotherium*, which will add materially to our knowledge of that form, also

¹ Acknowledgments are due to Drs. W. D. Matthew of the American Museum of Natural History, New York, S. W. Williston of the University of Chicago, F. B. Loomis of Amherst, and Prof. R. S. Lull of Yale University for having communicated full reports of last season's field expeditions and other fresh information.

an abundance of *Pachyrhynchus* ("Pachyrukhos") material, and various extinct types, ranging in size from "rodents as small as mice, up to an elephant-like creature closely resembling the *Palæomastodon* from the Eocene of Egypt." The study of this Patagonian collection is expected to clear up a number of problems concerning the evolution of South American mammals.

Upon our own continent probably the most important discoveries of the year are those of new Cretaceous dinosaurs from the Red Deer River in western Canada. The American Museum of Natural History, and the new Victoria Memorial Museum at Ottawa, Canada, have secured a fine series of skulls and more or less complete skeletons of these creatures, some of which are most extraordinary. A huge skeleton of a Jurassic dinosaur is reported to have been found near Rock Springs in Wyoming, and, together with the splendid specimens of Sauropod genera now being excavated in Utah by the Carnegie Museum, should serve to extend our knowledge of the anatomy and habits of these gigantic reptiles.

Another expedition sent out by the Carnegie Museum during the past summer, under the leadership of O. A. Peterson, had for its object a renewed search after fossils in the Eocene of the Uinta Basin, Utah, as well as the collection of further geological data for this region. This party met with very gratifying success, and among an interesting suite of Uinta mammalian remains should be mentioned a particularly fine specimen of *Diplacodon*, hitherto known only by incomplete material.

The Yale Museum expedition, under the direction of Prof. R. S. Lull, spent three months in the Panhandle region of Texas, during the course of which some 600 specimens illustrative of the Miocene and Pleistocene faunas were secured. Most noteworthy among these is a remarkable complete skeleton of *Equus scotti*, including even the terminal bones of the tail, the ossifications supporting the tongue and vocal organs, and the cartilaginous ribs attached to the sternum. Sufficient material of the ground sloth *Myiodon*

was obtained to permit of an accurate reconstruction of that form. As a net result, it is believed that the Pleistocene vertebrate life of Texas is represented in the Yale collection with greater completeness than in any other previously made. Prof. Lull's studies of Triassic vertebrates are referred to under the following section.

Two other expeditions in the western states have obtained highly satisfactory results. The American Museum has continued its explorations in the Lower Eocene formations of New Mexico and Wyoming, making very considerable collections of the interesting but imperfectly known fauna of that region. Under the leadership of Dr. J. C. Merriam, the University of California has been fortunate in securing a fine series of three-toed horses and other Miocene fossils from the deserts of central Nevada, and has resumed excavations in the marvelous asphalt deposits near Los Angeles.

Recent Literature on Fossil Vertebrates: Fishes.—Comparatively few publications on fossil fishes have appeared during the year. Following closely upon Dr. O. P. Hay's determination of the true nature and position of the long misunderstood segmented structures known as "Edestidae," appeared a critical review of the literature of *Helicoprion* and similar remains, by Dr. A. Karpinsky (*Verh. Min. Ges. St. Pétersb.*). Patten, in his *Origin of the Vertebrates*, and Hussakof, in N. Y. State Museum Bulletin 158, describe the anatomy of various Paleozoic forms. M. L. Joleaud has recently completed his study of the Miocene fish fauna of the district in Provence known as La Plaine du Comtat.

Amphibia.—Under the head of Amphibia, the most important recent publication is Dr. E. C. Case's *Revision of the Permian Amphibia*, published by the Carnegie Institution of Washington. R. L. Moodie has described, for the first time, a true frog from the American Jurassic, with one exception the only known Mesozoic Anuran. New amphibians from New Mexico have been brought to light by Williston and Case, and Moodie has examined further into

the structure of the remarkable Permian *Diplocaulus*.

Reptiles.—Fossil reptiles, from the nature of things, must always command a large share of attention. Among the special contributions to the literature dealing with this class may be noted Osborn's account of the "mummy" skeleton of the duckbilled dinosaur (*Trachydont*), and of the skull of a great cretaceous carnivorous dinosaur (*Tyrannosaurus*), published in the memoirs of the American Museum.

Particularly noteworthy is Lull's recent bulletin on "Life of the Connecticut Trias," in which he treats of general faunistic conditions, with especial reference, however, to dinosaurs and phytosaurs. Of these he gives several excellent figures, reproduced from models prepared by himself. Moodie describes the armored dinosaur *Stegopelta*, and Gilmore gives an interesting account of the newly mounted skeletons of *Camptosaurus* in the National Museum. The last-named writer also makes known a strange new mosasauroid reptile from the Cretaceous of Alabama, and Mehl brings to notice a new plesiosaur from Wyoming. Merriam, besides adding further to our knowledge of marine Triassic reptiles from Nevada, makes an interesting comparison between the vertebrate faunae of that state and Spitzbergen.

The Permo-Carboniferous of New Mexico has yielded a quantity of well-preserved reptilian remains, of such nature as to permit Williston and Case, in various papers, to publish restorations of *Limnoscelis* and *Diasparactus*, and to describe other forms of the Cotylosauria. Nearly complete skeletons, likewise, of *Sphenacodon* and *Ophiacodon*, established by Marsh 35 years ago, upon the evidence of fragmentary material, have enabled Williston to describe their structure and to disentangle a number of taxonomic problems. A very welcome contribution is that by Baron von Huene, entitled "*Die Cotylosaurier der Trias*," published in the current volume (59) of *Palaeontographica*.

Mammals.—Fossil mammals have provided an equally fruitful theme. For full bibliographical references

pertaining to the Artiodactyla one may consult O. A. Peterson's symposium paper presented before the last meeting of the Paleontological Society. E. S. Riggs has described during the year some new or little known Titanotheres from the lower Uintah formations, and J. C. Merriam has published an additional bulletin and memoir on the Pleistocene carnivora of Rancho La Brea, near Los Angeles.

The Ancestry of Man.—The literature bearing upon the ancestry of man has been enriched by a number of valuable contributions during the year. A memoir by Dr. Max Schlosser upon the early Tertiary fauna of the Fayum district in Egypt contains descriptions of three new genera which the author refers to the higher primates (*Anthropoidea*), one of which he regards as ancestral to the higher apes and man (*Beitr. Pal. Geol. Oester.-Ungarn*, Vol. XXIV, pp. 51-161). M. Boule continues his studies upon the skull of Chapelle-aux-Saints, which he correlates with the lower jaw found in basal Pleistocene deposits near Heidelberg, and recognizes as a distinct and primitive species of the genus *Homo*. Dr. G. F. Wright, in a volume on the *Origin and Antiquity of Man*, presents the case of a nearly forgotten viewpoint in modern scientific investigation, namely, that of the orthodox "reconcilers" between *Genesis* and geology.

Most important perhaps is Elliot Smith's presentation before the British Association of the evidence for regarding the pentailed tree-shrew (*Tupaia*) as a living representative of the more primitive mammals from which the lemurs, monkeys, apes, and finally man, have successively evolved. The known or suspected fossil members of this group of Insectivora in the early Tertiary formations will henceforth possess a peculiar interest. The sum total of these and other discoveries and interpretations is to define more positively and precisely from the standpoint of comparative anatomy the theoretical lines of evolution and origin of man, and to provide a number of approximate or collateral ancestors from paleontological data.

XXVIII. ANTHROPOLOGY, ETHNOLOGY, AND SOCIOLOGY

ANTHROPOLOGY AND ETHNOLOGY

GEORGE GRANT MACCURDY

International Congresses.—Three such congresses of special interest to anthropologists have been held during the year: the Eighteenth International Congress of Americanists, London, May 27-June 1; the Fourteenth International Congress of Prehistoric Anthropology and Archeology, Geneva, Sept. 9-14; and the First International Eugenics Congress, London, July 24-30. Of the numerous papers presented, especially at the first two of these congresses, to which the writer was a delegate, space can here be given only to a selected few, each under its appropriate heading. Immediately following the Americanist Congress, an international conference was called in London (June 4) by the Royal Anthropological Institute of Great Britain and Ireland, at which it was voted to organize an international congress of the anthropological sciences (exact title to be chosen later) which shall work in affiliation with existing related congresses. An organizing committee was appointed, of which Dr. A. P. Maudslay is president, and R. R. Marett, of Oxford, secretary. The work of the organizing committee has already been recognized by the International Congress of Prehistoric Anthropology and Archeology, which passed the following resolution at Geneva: "Resolved that this congress enter into amicable relations with an international congress now in process of formation and destined to cultivate particularly the field of ethnography and physical anthropology."

Anthropometry.—The bane of anthropometry as well as osteometry

has always been the lack of a uniform system of measurements. At the Thirteenth International Congress of Prehistoric Anthropology and Archeology a beginning was made toward an international agreement (*Compte rendu*, t. ii, p. 377, Monaco, 1906). This work was continued at the Geneva congress by an international commission which reached an agreement concerning 49 measures on the living (*Science*, n. s., xxxvi, 604, 1912; *Amer. Anthropol.*, Oct.-Dec., 1912).

At the closing banquet of the congress, the founding of an anthropological institute in connection with the University of Geneva was announced; Prof. Eugène Pittard is to be the first director.

North America.—By resolution of Congress, the *Handbook of American Indians north of Mexico*, published as Bulletin 30 of the Bureau of American Ethnology, has been ordered reprinted in an edition of 6,500 copies, of which 6,000 are for distribution by senators and representatives, and 500 by the Bureau.

Noteworthy among the publications in preparation by the Bureau are: a *Handbook of American Archeology* (in several volumes), by W. H. Holmes; a *Handbook of Aboriginal Remains East of the Mississippi*, by D. I. Bushnell, Jr.; Part II of the *Handbook of American Indian Languages*, by Franz Boas; and a *List of Works Relating to Hawaii*, by H. M. Ballou.

Eskimo.—V. Stefansson has returned from a stay of several years in the North, bringing with him important data in the shape of notes and collections. At his last winter

camp near Pt. Stevens, Parry Peninsula, he found much pottery on old village sites, some at a depth of several feet. This, the first reported discovery of pottery from the central and eastern Eskimo regions, points to ancient origin for the art of pottery among the Eskimo. The old pottery resembles and is probably the prototype of the modern pottery of the Alaskan Eskimo, which hitherto was supposed to be copied from the Siberian or American tribes. Stefansson's discovery of "white" Eskimos is noted in the *YEAR BOOK* for 1911 (p. 666).

Canada.—Dominion anthropological activities are directed by Dr. Edward Sapir, ethnologist, and Harlan I. Smith, archeologist, both of whose bureaus are attached to the Geological Survey. In preparation for extensive publications dealing with various aspects of Wyandot culture, during the past year C. M. Barbeau, attached to the Survey, has obtained much ethnological material from the Huron-Wyandots in Quebec and Ontario (and Oklahoma).

Francis H. S. Knowles undertook for the Survey in the summer of 1912 a careful anthropometric study of the Iroquois Indians of Six Nations Reserve. In connection with this work specimens of Indian hair were obtained. Mr. Knowles also secured a considerable amount of skeletal material from an Iroquois ossuary situated close to the reserve, material which, together with the skeletal material obtained by Mr. Wintemberg at the Roebuck site near Spencerville, Ont., is expected to be of great value in the study of the physical type of the Iroquois.

Dr. A. A. Goldenweiser's researches of the summer of 1911 among the Iroquois of Six Nations Reserve, Ontario, have been continued on further trips taken during the following winter and the summer of 1912. Dr. Goldenweiser has made considerable progress in the thorough study of his special theme, that of the social organization of the Iroquois. Considerable material has also been secured on secret societies, rituals, and other ethnological topics, and a large body of text material been recorded.

F. W. Waugh is making a study of the material culture of the Iroquois. He has spent a great part of the present year in gathering explicit information on the various topics embraced under this term, spending most of his time at Six Nations Reserve, but supplementing his material by visits to Caughnawaga, Tonawanda, Onondaga Valley, and Oneidatown. The data on foods and medicines are particularly complete.

W. H. Mechling continued the ethnological work among the Malecite Indians of New Brunswick begun in the summer of 1911. The time was chiefly employed in the rounding out of data already procured, special stress being laid on the subject of medicine.

An extended field trip was taken by Dr. Paul Radin among various Ojibwa bands of Eastern Ontario. His materials include full data on the mythology and various other aspects of ethnological research. Practically all of the mythology secured is in text, and considerable attention was paid to a critical study of Ojibwa phonetics and morphology.

The Survey has procured the permanent services as field ethnologist of James A. Teit, of Spences Bridge, B. C., who is so well-known to ethnologists for his admirable work among the interior Salish tribes of British Columbia. Mr. Teit is at present engaged in field work among the Tahltan Indians of the Upper Stikine. Special attention is being given by him to the collection of Tahltan songs by means of a phonograph.

The archeological field work of the Survey during the field season of 1912 is the beginning of a systematic study of the whole of Canada. In eastern Ontario Mr. Smith conducted reconnaissance in the vicinity of Ottawa, more particularly along the northern side of the Ottawa River, in the Gatineau Valley, in the Nation Valley, and on Rideau Lake. Mr. W. J. Wintemberg carried on a reconnaissance in the Ottawa Valley above the city of Ottawa and nearly the whole length of the Nation Valley. This reconnaissance work re-

sulted in the locating of a number of cave-dwellings in the Laurentian Mountains near the north side of the Ottawa River. Pottery of an Iroquoian type has been found in these caves, which are believed to be worthy of thorough, intensive exploration. Many village sites were found which are probably of Algonkin origin. They are all rather small in extent and the deposit is shallow. In general they are near the streams on suitable camping places for canoe parties.

Intensive exploration was carried on in one of four large Iroquoian village sites near the head waters of the Nation, within eight miles of Prescott on the St. Lawrence River. In all, there are five sites within a radius of about four miles, four of them being extensive. This type of site is usually on the top of a low hill near a spring or small stream, a location entirely different from that of the sites along the Ottawa River and in the lower Nation Valley. Charred corn and beans are found, which, together with the fact that the sites are not as a rule on large streams, suggest that the people were agricultural. Arrow points chipped from stone are exceedingly rare and those made of antler are also uncommon. The grooved axe has not been found and even the celt is rare, but fragments of pottery are very plentiful, as are also awls or sharpened bones. A number of human skeletons have been found but the burials are usually unaccompanied by artifacts. The skeletons show that the people suffered from bone diseases and that there was considerable infant mortality. They were apparently all of one physical type.

United States.—The year marks the beginning of an archeological survey of New England by the Department of Archeology at Andover. In May W. K. Moorehead went from Moosehead Lake in a canoe with an Indian guide through the long chain of lakes and rivers and studied the region as far as Fort Kent on the St. Johns River, a distance of 220 miles. He discovered about 15 ancient camp sites on the Allegash, on various lakes, and on the St. Johns

River. His trip was but a reconnaissance. Later the Penobscot Valley between Moosehead and the mouth of the river was examined and four large cemeteries were opened—one at Passadumkeag, one at Orland, and two on Lake Umbagog. In these, 170 graves were found and opened and 800 objects removed from the graves, something like 200 photographs were taken and the field notes are complete.

For the present the term "red-paint people" is applied to the burials, as the culture appears to be one previously unknown, save through Mr. Willoughby's explorations. No human bones remain in the graves, and the stone objects have, in some instances, begun to disintegrate. The graves are unquestionably pre-Algonquian. The artifacts are confined to a few highly specialized types. Pottery, grooved axes, bone and shell objects, the ordinary ornaments, pipes, grooved hammers, etc., are wanting. Great quantities of the red paint occur in nearly every grave.

S. J. Guernsey of the Peabody Museum, Harvard University, has discovered and examined several rock shelters and caches of stone implements in the Charles River Valley, Massachusetts; he has also located prehistoric burial places, village sites, and shell heaps on Martha's Vineyard.

New Jersey.—The State Geologist, Dr. H. B. Kummel, has organized an archeological survey of the state. The work is in charge of Alanson Skinner, who confirms the existence of an old argillite culture antedating the industry left by the historic tribes. This argillite culture is found not only in the yellow layer beneath the surface soil but also in the lower horizons of certain rock-shelter deposits. Ernest Volk, for the Peabody Museum of Harvard University, is making a special study of the Trenton gravels for traces of glacial man.

Algonquian and Siouan Tribes.—The Bureau of American Ethnology has had three investigators in this field. Dr. Truman Michelson's memoir bearing the title *A Linguistic Classification of the Algonquian*

Tribes is now in press. The study of aboriginal music was conducted among the Chippewa Indians by Miss Frances Densmore. The result of these studies has been incorporated in a bulletin already published, and another about to go to press. Miss Densmore's last work has been on the songs of the sun-dance ceremony among the Sioux. Dr. Paul Radin's researches among the Winnebago have been embodied in an extended monograph ready for publication.

Seneca.—The myths of this tribe have been collected, translated and annotated by J. N. B. Hewitt (for the Bureau of American Ethnology), who is also editing and annotating a collection of 120 legends, traditions, and myths, recorded by the late Jeremiah Curtin.

Southern States.—The Bureau's investigations of the East Cherokee of North Carolina have been carried on by James Mooney, who has located mixed-blood remnant bands in the eastern part of the state.

Dr. John R. Swanton of the Bureau has continued ethnologic research in Oklahoma and Texas among the Creek, Natchez, Tonkawa, Caddo, and Alibamu Indians, also among the Tunica and Chitimacha tribes of Louisiana. Francis La Flesche, likewise of the Bureau, has gathered a large body of material relating to the myths, religion, and ceremonies of the Osage Indians in Oklahoma.

C. R. Moore has explored more than 500 miles of territory bordering on the Red River in Louisiana and Arkansas. In a mound at Gahagan, La., Moore found a group of burials that yielded many interesting relics, including an earthenware pipe of unique pattern, an effigy pipe so constructed that the smoker can at will blow blasts of smoke through the mouth of the image. Red River in Arkansas proved to be a most interesting region archeologically. The burials encountered were generally from 12 to 15 ft. deep. The features of the ceramic art are the fine quality and graceful forms of the culinary vessels, and the great length of the earthenware pipes.

All details of the expedition are

published in the *Journal of the Academy of Natural Sciences*, Philadelphia, Vol. XIV, 1912.

The Southwest.—The Bureau of American Ethnology during 1911-12 prosecuted ethnological and archeological researches in several localities. Conjointly with the School of American Archeology, excavations were conducted in the Rito de Los Frijoles, at the old Jemez pueblos of Giusiwa and Kwasteyukwa, and in a cemetery of the great stone pueblo of Puye, in New Mexico, at each of which sites important collections were made. These excavations were conducted by F. W. Hodge and Dr. E. L. Hewett, representing respectively the Bureau and the School. Mr. Hodge also made paper squeezes of the early Spanish inscriptions on El Morro, or Inscription Rock, in western New Mexico, which have such an important bearing on the history of the Pueblo Indians.

Dr. J. Walter Fewkes, of the Bureau, investigated the great cave pueblos and other ruins within the Navaho National Monument of northern Arizona, visiting several hitherto undescribed cliff-dwellings and gathering collections of objects illustrating the prehistoric culture of this region. He also conducted important excavations at Wukoki and adjacent ruins on the Little Colorado River in Arizona, and in January, 1911, visited Cuba and the Isle of Pines, where important archeological studies were pursued and collections made. Subsequently Dr. Fewkes made a reconnaissance of central and western Arizona, where the western limit of Pueblo culture was traced and studies made of extensive archeological remains consisting of fortifications on commanding sites, fragile walled structures in the valleys, and the remains of irrigation works almost everywhere.

Mrs. M. C. Stevenson prosecuted her studies among the Tewa Indians of the Rio Grande in New Mexico, especially at San Ildefonso and Santa Clara, giving special attention to religious ceremonies, material culture, natal rites, sociology, and the calendar system. John P. Harrington's researches for the Bureau

have been among the Mohave Indians of Arizona and California.

A. V. Kidder, of the Peabody Museum, Harvard University, has continued his special study of Pueblo types of pottery and their distribution.

Prof. Ellsworth Huntington of Yale University has continued his study of climate fluctuations, especially in the Southwest, where his pulsatory theory of climatic changes, based on observations made in Asia, southern Europe, and northern Africa, finds striking confirmation. The climate of the past is reflected in surface topography as well as in the animate world, and both these point to a moister climate for the Southwest in pre-Columbian times. Numerous ruins, where now aridity makes occupation of the land precarious even with all the aid of modern science, tell the same story as do the curves plotted from an analysis of the annual ring growth in trees; and both these categories confirm the conclusions derived from physiographic evidences. To sum up, the main climatic changes in America have been synchronous with those of the Old World and of the same kind; and in the temperate continental regions of the world, periods of exceptional aridity or of exceptional moisture have sometimes been of long duration. (See also XXV, *Meteorology and Climatology*.)

California.—Prof. A. L. Kroeber, in charge of anthropological investigations for the University of California, reports a thorough exploration of another one of the large mounds on San Francisco Bay. This is the tenth of the 400 odd mounds on these shores that have thus been critically examined. A preliminary reconnaissance of almost the entire coast of southern California, from Santa Monica to San Diego, has been made. Prof. Kroeber spent some time during the summer in southern California compiling data on tribal and local ethno-geography. This information is to be combined with data previously obtained in a map or series of maps on the ethnology of the southern part of the state. During the winter he conducted a study in phonetics of the

Yuki language of northern California.

Panama-California Exposition.—In connection with the opening of the Panama Canal an exposition will be held in San Diego, Cal. The anthropological department is in charge of Dr. E. L. Hewett, Director of the School of American Archeology. Among Dr. Hewett's colleagues in this work are Holmes and Hrdlička, who are preparing the Government's anthropological exhibit, for which the results of Hrdlička's recent trip to northeastern Asia will be available. Notable among these is the discovery by Dr. Hrdlička of vestiges of an ancient population, dating back perhaps to late paleolithic times, which possibly gave rise to the American Indian; the type is physically identical. Dr. Hrdlička reports that "the field for anthropological and archeological research in eastern Asia is wide, rich, to a large extent still virginal, and not excessively complicated. It is surely a field which calls for close attention not only on the part of European students of the far East, but especially on that of the American investigator who deals with the problems of the origin and immigration of the Indian." (See also symposium in *American Anthropologist*, January-March, 1912, pp. 1-60.)

Mexico and Central America.—Of prime importance is Mrs. Zelia Nuttall's discovery of the *Cronica de Nueva España*, by Cervantes Salazar, announced for the first time at the London Congress. Mrs. Nuttall's discovery was made in the manuscript department of the National Library, Madrid. This long lost chronicle contains 888 closely written pages. The work is supposed to have been commenced about 1559, when Salazar was appointed official historiographer of Mexico. It was never completed and has been considerably mutilated by censorship and vandalism; so that the fixing of its authorship proved a difficult task. The internal evidence, and especially a marginal note in ch. 24 of Book IV, pointed to Cervantes Salazar. In this Dr. C. W. Currier agrees with Mrs. Nuttall. The "*Chronicle*" consists of six books. The sixth book

has but 32 chapters and the heading of a thirty-third. The first two of these 32 chapters are devoted to a description of the ancient rites and customs of the Indians and to the discovery and conquest of Mexico. A chronicle of New Spain by a personal friend and admirer of Cortes with first-hand knowledge of the times about which he wrote is an event of the first order; and we have every reason to believe that it will soon be suitably published by the Spanish authorities. Mrs. Nuttall's discovery calls attention afresh to the possibilities of the Spanish archives as a hunting ground for Americanist treasures, and to the fact that by royal decree all original documents relating to the New World now scattered are soon to be brought together in the Archivo General de Indias at Seville.

Dr. Paul Henning of the Museo Nacional, Mexico, has explored an ancient site south of Tuxtepec and reports a large number of ruins, hitherto unknown, scattered along the eastern foothills of the Sierra de Ixtlan and that of Villa-Alta.

Succession of Cultures in the Valley of Mexico.—A number of excavations conducted by Sr. Manuel Gamio in the region of Azcapotzalco prove that Aztec remains are found only in mounds and in a very thin superficial layer. Under this layer is a subaerial deposit of disintegrated tufa which reaches a thickness of six meters. Remains from this deposit are of the type of San Juan Teotihuacan. Below this is still another well marked horizon with a ceramic art characterized by rude human figures as well as painted and incised pottery. Much of this is water-worn. The female figures are easily distinguished from the male by the bulging thighs. Prof. Franz Boas, while director of the International School of American Archeology and Ethnology, found the same ancient culture in the foothills of the Sierra de Guadalupe and on the Cerro de la Estrella. It resembles in many respects the cultures of Michoacan and Colima. A succession of at least three cultures, of which the Aztec is the latest, seems to be definitely established.

Quirigua.—This ancient Maya city in the Motagua valley, Guatemala, is being excavated under the auspices of the School of American Archeology by a party under the direction of Dr. E. L. Hewett.

South America.—At the London Congress Dr. R. Pietschmann gave an account of the contents of the, as yet unpublished, chronicle written from 1583 to 1613 by Huaman Poma, an Indian of northern Peru. It is a thick quarto of 1,179 pages with numerous clever pen-and-ink drawings to illustrate the text. The points of the story touched upon by Dr. Pietschmann included: the author's history of Peru from the mythic age of the Viracochas down to the Spanish Conquest; his description of the manners and customs of the Inca time; translations of prayers and songs from the original Quichua; the transgressions, inhumanities, and crimes of the Spaniards as witnessed by Huaman Poma. When finished, this manuscript was taken to Lima, accompanied by an address to the king. By rare good fortune it escaped censorship by priest and official, was forwarded to Spain, and finally found its way to the Royal Library at Copenhagen.

Early Man.—Dr. Ales Hrdlička's investigations relating to *Early Man in South America* have appeared as Bulletin 52, Bureau of American Ethnology (1912). In this work he had as collaborators Bailey Willis, geologist, W. H. Holmes, archeologist, and F. E. Wright and C. N. Fenner, petrologists. Willis accompanied Hrdlička on the expedition. The conclusions reached are that the evidence "fails to establish the claim that in South America there have been brought forth tangible traces of either geologically ancient man himself or of any precursors of the human race." Of the material on which Ameghino based his *Tetraprothomo*, the femur is that of a carnivore; and the atlas, while human, does not fall outside the range of variation as exemplified in a modern Indian series. Ameghino's *Diprothomo* and *Homo pampaeus* fared little better; the "split-stone" industry and the "broken-stone" industry referred by him to *Homo pampaeus* and *Tetra-*

prothomo respectively are the work of tribes occupying that region "in recent centuries, under conditions corresponding in all essential respects with those of the present day." The discovery by Professor Bingham of human bones near Cuzco, Peru, for which a considerable antiquity has been claimed, came too late for discussion in Hrdlička's work. Morphologically the Cuzco remains do not differ from the type common to the graves of Chicama and elsewhere. Professor Bowman, who studied the geologic relations of the Cuzco remains, refers the deposit in which they were found to the last glacial epoch, but admits the possibility of the bones being of later age than the deposit. One of the objects of the expedition of 1912 is to throw new light on this very point. The expedition returned on Dec. 19, bringing a large collection of skulls, bones, bronze tablets and pottery, the most interesting remains of early civilization being found at the site of the ruined pre-Inca town of Machu Picchu.

American Museums.—The activities of the anthropologic staff of the U. S. National Museum have been devoted in very large measure to the installation of the collections in the new Museum building, a work much prolonged because of the necessity of awaiting the completion of the great number of exhibition cases required. The installation of ethnology is now practically complete, but archeology, though well advanced, is still awaiting the necessary quota of cases. By the end of the year it is expected that all the halls will be open to the public.

Money is being raised for the building of an additional section to the Peabody Museum of American Archeology and Ethnology, Harvard University. A hall of European prehistoric archeology has been installed at the American Museum of Natural History. The cornerstone of a Museum building for the Ohio State Archeological and Historical Society, to cost \$100,000, was recently laid at Columbus, Ohio. The addition to the Public Museum of the City of Milwaukee is nearing completion. The Anthropological Museum of the Uni-

versity of California was recently opened to the public.

Europe: Paleolithic.—The most pronounced developments in the European field have been along prehistoric lines. The Institut de Paléontologie Humaine, Paris, has carried on remarkably fruitful explorations in Spain. Deposits at the mouth of the cavern of Castillo near Puente Viesgo (Province of Santander) have been excavated to a depth of 40 ft., passing in turn through one neolithic (or eneolithic) horizon and 11 distinct paleolithic horizons. Near Castillo Professor Obermaier found another cavern (La Pasiaga) with paleolithic mural drawings and engravings. In March, 1912, Breuil and Obermaier explored a large cavern at Jimera (between Algeciras and Ronda) reported to them by Col. Werner. There they found numerous paleolithic wall paintings dating from at least four different epochs. Some of these resemble the cavern art of northern Spain. From Jimera, Breuil and Obermaier proceeded to the Sierra Morena, where they found rock-shelters with paleolithic paintings. Breuil reports 160 wall paintings in two rock-shelters near Alpera (Province of Albacete).

Meanwhile the Spaniards themselves have not been idle. The Marquis of Cerralbo is at present carrying on investigations at ten different stations, including Torralba (Province of Soria), where he has found numerous remains of *Elephas antiquus*, and possibly a still older species, *E. meridionalis*, associated with an eolithic and early paleolithic (Chellean) industry. The Marquis of Cerralbo was also instrumental in the founding last June of a Comisión de Exploraciones Espeleológicas, which will direct all future prehistoric explorations.

On July 20 Count Bégouen and his sons discovered a new French cavern with paleolithic wall engravings, Tuc d'Audoubert near St. Giron (Ariège). This cavern, seen by the writer five days later, is a series of galleries made highly picturesque by myriads of stalactites and stalagmites. In one of these galleries, entered on Oct. 10 after breaking the stalagmites that sealed the entrance,

they found two clay statuettes representing the extinct bison, the first proof that paleolithic man modeled in clay.

Remarkable paleolithic works of art have been found in the floor deposits at La Madeleine, Limeuil, and Sergeac (Dordogne).

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SOCIOLOGY

HERBERT N. SHENTON

Theory.—The psychological aspect of sociological theory has received a very worthy contribution to its literature in Prof. Chas. A. Ellwood's *Sociology in its Psychological Aspects*. This book gives the most comprehensive

sive view and the most complete summary as yet presented of that section of functional sociology which has for its subject matter and its foundation functional psychology. Prof. Ellwood traces the development of mind in man's effort to control the activities caused by environment through the places where it has a controlling aspect in sustaining and developing the life process to its ultimate control, not only of the life of the individual, but also of the life of the group and of the race.

The environmental aspect of sociological theory has been reinforced by the contribution of *Influences of Geographic Environment*, by Ellen C. Semple, the book being a restatement of the principles of Ratzel which have been tested and developed by the writer. Miss Semple compares typical peoples of all races and all stages of cultural development living under similar geographic conditions. When under these similar environments, people of different ethnic stocks manifest similar or related social, economic or historical developments, she concludes that we may reasonably infer that such similarities are due to environment and not to race. Miss Semple does not defend the doctrine of geographic determinism, and even limits her use of the phrase "geographic control," preferring rather to speak of "geographic influences" on society.

The biological aspect of sociological theory recognizes a very important contribution in the recent work on heredity performed in the interest of the "improvement of the human race by better breeding" as it is being projected by the eugeniasts. Dr. C. B. Davenport's *Heredity in Relation to Eugenics* gives us both a general and a detailed statement of the findings in relation to the inheritance of family traits. He contends that society should make adjustments of its laws and organization so as to eliminate such undesirable traits as produce delinquents and defectives and hinder progress in human evolution. H. H. Goddard of Vineland, N. J., has also given us the results of another intensive study of the hereditary traits of a single family in his *Kallikak Family*.

Social Theory as the Basis of Public Policy.—One of the most important functions of sociology is to provide a basis for the rational criticism of public policy and for the prediction of the results of readjustments in the social order. Many phases of this more practical aspect of sociology were emphasized in the papers read at the 1911 meeting of the American Sociological Society. Prof. Franklin H. Giddings of Columbia University, in the presidential address, the theme of which was "The Quality of Civilization," discussed the problem of the assimilation of our ethnically variegated population. He predicted that the three assimilative forces—the standardizing of consumption, as opposed to the specialization in production; the modern scientific view of nature as opposed to luck, miracle, superstition and tradition; and a resultant increasing seriousness in attention to the possible attainment of social justice—would create a solidarity both of intellect and feeling. The qualities of this solidarity would be "dignity and sobriety superadded to zeal" and "beauty and graciousness added to power."

At the same meeting three important sociological studies of urban life analyzed the social elements in combination and the social factors in action in urban communities in such a manner as to construct basic theory as a foundation for positive public policies in relation to such groups. Frederic C. Howe, in a paper on "The City as a Socializing Agency," urged the promotion of positive city programmes on the foundation of an economic viewpoint of community ownership which would "create a new citizenship before which the personal derelictions will disappear." He urged the sociological diagnosis of the cause of urban disease and the correction of it rather than the treatment of the symptoms. Prof. Howard B. Woolston, of the College of the City of New York, in a paper entitled "The Urban Habit of Mind," set forth the profound effect upon the mentality of their inhabitants produced by the complex life of our cities. The mingling with the throng, the loss of the feeling of individuality in being overshadowed by the powers around him,

and the feeling of a greater personality derived from the sense of co-operation with his fellows, are socializing forces the participating in which produce the "social mind" in the citizen. On the basis of this theory, which he elaborated in detail, he urged the deliberate development of the character, the spiritual unity and the collective effort toward an adjusted order in which all men may share. Miss Jane Addams, in her paper entitled "Recreation in Urban Communities," pressed the obligation of the modern heterogeneous city to provide centers in which "social life may be organized and carried on steadily and normally." Her recommendations, based on sociological theories, the result of extensive inductions, and carefully checked by personal observations, were positive, and recommended such recreations as caused functioning and social intercourse as opposed to the passive receptivity developed by many of our present modes and also such as in the Spencerian phrase developed a democracy where the "liberty of each is limited by the liberty of all," rather than such as develops the baser motives of gang politics—desire for favor, for protection, unscrupulous advantage, or the fear of ridicule or blind loyalty to comrades. (See also XVI, *Recreation*.)

Quantitative Method.—The quantitative or more strictly scientific aspect of sociology will be able to refine and extend its laboratory, survey and other inductive studies on account of social correlations made possible to even beginners in scientific sociology by the appearance of W. Palin and Ethel M. Elderton's *Primer of Statistics*. A later work, the *Elements of Statistical Method*, by Wilford I. King of the University of Wisconsin, is written particularly for the use of those interested in sociology, political economy and administration. Both of these works are rendering a valuable service in simplifying the scientific study, analyses and the general use of large masses of sociological data. The primary contribution, however, has been made by C. Udny Yule in his *Introduction to the Theory of Statistics*. Mr. Yule recognizes that one of the fundamental difficulties of the observer of so-

cial facts is that he cannot experiment but must deal with circumstances as they occur practically apart from his control, as we use the word control in the pure sciences. Not being able to replace the complex systems of causation in society by simple experimental systems in which only one causal circumstance is permitted to vary at a time, the sociologist is forced to deal with problems of multiple causation. Therefore the resolving of cases of multiple causation into simple causations, or, differently stated, the eliminating of the error in the case of any cause produced by associated causes, must be accomplished through statistical methods. Mr. Yule, therefore, expands methods of determining the degree of independence and of association of each of the multiple causes making a resultant manifold classification possible. He further develops formulae and processes for the measurement of the degree of correlation when the multiple causes are variable, finally discussing sampling and multiple correlation.

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XXIX. PSYCHOLOGY AND PHILOSOPHY

RALPH BARTON PERRY

PSYCHOLOGY

General.—In a recent criticism of James Ward's article on "Psychology" in the last edition of the *Encyclopædia Britannica* ("The Psychology of the New Britannica," *Amer. Jour. of Psych.*, Jan., 1912), E. B. Titchener brings out very clearly the enormous growth of this science since Ward's article first appeared in 1886, and especially emphasizes the development of a number of more or less independent fields of investigation. "Psychology to-day," he writes, "is less a coherent system of knowledge than a certain attitude of mind over against a vast collection of special investigations." The older philosophical or epistemological psychology, based on some fundamental definition of mind, is replaced by a multitude of experimental investigations of specific mental states and processes; and alongside of this have appeared class, collective, ethnic, genetic, differential, applied, educational, juristic, abnormal, and therapeutic psychologies, each taking some group of concrete data as its point of departure, and each as yet very imperfectly coördinated with the rest. The same state of affairs is set forth in J. R. Angell's *Chapters from Modern Psychology*, a somewhat popular, but well written, account of "the main characters of the contemporary situation in psychology."

A noteworthy departure, having an important bearing on the whole field of psychological inquiry, is the definition of psychology by the English psychologist W. McDougall, as "the positive science of the behavior of living things" (see this author's small *Psychology* in the Home University Library). Such a definition of psy-

chology virtually means the extension to psychology at large of the method hitherto employed only in those branches of psychology, such as animal psychology, in which introspection is impossible. It confirms the statement recently made by R. MacDougall (*"Mind as Middle Term," Psychological Review*, Sept., 1912) to the effect that "the tide has now turned in the direction of biology, whose students now hold the same general relation to experimental psychology which physiology possessed a generation ago." It also bears upon the question of the importance and limits of the method of introspection, now much debated (see the article just mentioned, and also below).

Psychological Method.—The method of introspection has been under fire during the past year, and the extent to which reliance is placed on it leads to important differences of emphasis among investigators. W. McDougall (see his *Psychology*) limits the scope of introspection because "in itself a mere description of the consciousness of any subject does nothing to explain his behavior." R. Dodge (*"The Theory and Limitations of Introspection," Amer. Jour. of Psych.*, April, 1912) calls attention to the various subconscious, causal, physiological, and psycho-physical aspects of the mental life that fall outside the range of introspection. E. B. Titchener, the most prominent champion of introspection, protests against using the term introspection in a vague and equivocal sense. It should stand for a certain specific methodological procedure available for the study of certain phenomena, and is proved by the body of results obtained. It is important in introspection to distin-

guish between "description" and "statement of meaning" (cf. "The Schema of Introspection," "Prolegomena to a Study of Introspection," "Description vs. Statement of Meaning," *Amer. Jour. of Psych.*, April, July, Oct., 1912).

Experimental Human Psychology.—Work in this field falls naturally into three groups. Those who emphasize the introspective method are interested mainly in the description of the higher mental processes. Typical investigations of this type are L. R. Geissler's "Analysis of Consciousness under Negative Instruction" (*Amer. Jour. of Psych.*, April, 1912); M. R. Fernald's "Diagnosis of Mental Imagery" (*Psych. Monographs*, Feb., 1912); and various studies in æsthetic experience, such as H. P. Weld's "Experimental Study of Musical Enjoyment" (*Amer. Jour. of Psych.*, April, 1912). A second group of investigations deals with sensory processes. To this group belong G. F. Arps' "Introspective Analysis of Certain Tactual Phenomena" (*Psych. Rev.*, Sept., 1912), dealing with the effect of the duration of stimulation on intensity; J. E. Winter's "The Sensations of Movement" (*ibid.*), based on experiments tending to prove that the muscles and tendons rather than the joints are the seat of sensations of movement; a paper by C. E. Ferree and G. Rand on "Colored After-Images and Contrast" (*ibid.*, May, 1912); and J. W. Todd's "Reaction to Multiple Stimuli" (*Archives of Psych.*, Aug., 1912), showing that the reaction time is shorter in proportion to the number of simultaneous stimuli. A third group of investigations deals with mental and motor efficiency, being quantitative studies of simple and complex reactions. These investigations are closely related to educational and other practical problems, and are largely non-introspective. To this group belong H. T. Hollingsworth's "The Influence of Caffein on Mental and Motor Efficiency" (*Archives of Psych.*, April, 1912); E. L. Thorndike's "Curve of Work" (*Psych. Rev.*, May, 1912); and various studies in memory, such as C. H. Bean's "The Curve of Forgetting" (*Archives of Psych.*, March, 1912), and V. A.

C. Henmon's "Relation between Mode of Presentation and Retention" (*Psych. Rev.*, March, 1912).

Comparative Human Psychology.—Within this general field there is a notable interest in the demarkation of mental types and classes, such as grades of general ability, measured in terms of an "intellectual index," temperaments, types of reaction, and types of mental imagery. Closely related to this work are studies in individual and group efficiency. On the anthropological side stand investigations in folk-psychology, national psychology, and special studies of the primitive races of America. For a summary of literature one may consult the *Psychological Bulletin* for Oct. 15, 1912.

Abnormal Psychology.—The relation between psychology and medicine (especially neuro-pathology) is becoming more intimate every year. The interest in Freud's principles and methods of psycho-analysis continues to increase, as is indicated, for example, in the trend of the papers published in the *Journal of Abnormal Psychology*. A. Meyer, in a recent summary of literature (*Psychological Bulletin*, April 15, 1912), has discussed the distinction made (by Münsterberg and others) between psychopathology, in which "any mental disorder must be viewed as 'symptom of some definite disease,'" and pathopsychology, in which such disorders are regarded as variations of similar normal mental phenomena. A considerable amount of experimental work on pathological cases of sensitivity, habit formation, association, etc., is being carried on by investigators whose training is primarily psychological (for summary consult *Psychological Bulletin*, *loc. cit.*). On the border line between educational and medical psychology is the stimulating book of Edmund B. Huey, *Backward and Feeble-Minded Children: Clinical Studies in the Psychology of Defectives*. A most promising feature in the movement for the application of psychology to medicine was the joint meeting of psychologists and nerve physicians at the beginning of the year in Washington. Much attention was also given to the problems of inheritance

of abnormal mental traits. A characteristic specimen is the book of H. H. Goddard, *The Kallikak Family* (see XVIII, *Prevention, Correction, and Charity*; and XXVIII, *Sociology*.)

Animal Psychology.—As has been the case for several years, more attention was given to studies of animal behavior and psychology in America than in any other country. The most important general works in this field that have recently appeared are S. J. Holmes's *Evolution of Animal Intelligence*, an essay popular and introductory in nature, on mental development from tropism to the intelligence of primates; and E. L. Thorndike's *Animal Intelligence, Experimental Studies*, a collection of papers describing experiments on chicks, fishes, monkeys, etc., and containing also general discussions of method and of mental development in animals.

In America the tendencies in animal psychology are clear. A large amount of work is being done on the habits and acquired reactions of insects and other invertebrates, and more work than in all parts of the world together on the behavior of the vertebrates (see, for example, *The Development of Certain Instincts and Habits in Chicks*, by F. S. Breed, Behavior Monographs, 1911). Interest has shifted from the question of whether organisms possess the ability to profit by experience to problems of sensibility and perception, and just now the major part of the material published deals with aspects of sensibility—visual, auditory, gustatory, olfactory, etc., and with analyses of perceptual processes. Notable contributions to this branch of the subject are contained in K. S. Lashley's "Visual Discrimination of Size and Form in the Albino Rat" and other papers published during the current year in the *Journal of Animal Behavior*.

Applied Psychology.—In the field of applied psychology the American literature of the year 1912 was especially rich in contributions to educational psychology, with a certain emphasis on the study of graded mental tests. A relatively new turn is given to the science of applied psychology by the consideration of the

problems of human efficiency in practical life, especially in commercial and industrial activity. The movement in favor of vocational guidance and the widespread industrial movement for so-called scientific management pointed to the need of experimental psychological investigations, in order both to find the fit men for the vocational work, and to find means for the improvement of the work to be done. A good example of the application of laboratory methods to the problem of vocational work is afforded by C. E. Seashore's presidential address to the Psychological Association on the "Psychological Analysis of the Singer." Experimental studies on industrial workers, such as motormen of electric railways, telephone employees, and so on, were carried on by H. Münsterberg. The results were published in a book on *Psychology and Industrial Efficiency*. Part of this book contains studies as to the conditions of efficiency in commerce and industry. This latter problem has been popularly treated by W. D. Scott in his new book *Increasing Human Efficiency in Business*. An excellent review of the whole literature on the importance of the fatigue factor in industrial labor is Josephine Goldmark's *Fatigue and Efficiency*. Under the head of "applied psychology" should be mentioned also the application of psychology to jurisprudence and criminology. This interest is represented by the translation of French and German works on criminology in the "Modern Criminal Science Series," published by the American Institute of Criminal Law and Criminology.

Psychology of Religion.—This is peculiarly an American interest. The most important recent work is G. M. Stratton's *Psychology of the Religious Life*. It is distinguished from the work of James, Starbuck, etc., by the comparatively small reliance placed on the *questionnaire* and on autobiography. Instead the author has drawn upon anthropological material and studied sacred books and forms of ritual. He attaches especial importance to the element of emotional, practical, and intellectual conflict in religion.

PHILOSOPHY

General Philosophy, Metaphysics and Theory of Knowledge.—The influence of James and Bergson continues to be the most conspicuous feature of English and American thought. A third and very important posthumous work of James has appeared, the collected *Essays in Radical Empiricism*, most of which were originally written and published in the years 1904-5. In these essays James expounds his relational theory of consciousness and his doctrine of "pure experience"; and is allied more closely with the positivistic and realistic tendencies of the day than with its voluntaristic and vitalistic tendencies. Of the books about James that have begun to appear in considerable number, *La Philosophie de William James*, by Th. Flournoy, is remarkable both for its accurate and discerning account of the philosophy and for its faithful delineation of the philosopher. Royce's *William James and other Essays* contains an interesting account of James' place in American life and thought. Bergson's vogue in America continues to increase, and has been stimulated by his approaching visit to Columbia University. His Oxford lectures (*La Perception du Changement*, 1911), and his *Hibbert Journal* article ("Life and Consciousness," October, 1911) have brought him into closer contact with English-speaking philosophers, and the translation of his principal works has greatly widened his public. The number of books written about him testifies to his influence. Of these J. M. Baillie's *Critical Exposition of Bergson's Philosophy* is clearest and most reliable in point of exposition. A. D. Lindsay's *Philosophy of Bergson* should also be mentioned. Among the briefer criticisms of Bergson, the most important are A. W. Moore's "Bergson and Pragmatism" (*Philosophical Review*, July, 1912), in which the author suggests that an evolutionary philosophy such as Bergsonism needs an evolutionary logic to save it from intuitionism; B. Russell's "The Philosophy of Bergson" (*Monist*, July, 1912), a vigorous assault upon Bergson's whole position; and A. O.

Lovejoy's "The Problem of Time in Recent French Philosophy" (see below). In connection with the interest in James and Bergson it is proper to mention also the important work of W. McDougall entitled *Body and Mind: A History and Defense of Animism*. This is a psychologist's discussion of the philosophical problems underlying his own science. The author criticizes the traditional "parallelistic" view, and defends a doctrine of psychical efficiency that brings him close not only to early animistic speculation, but to modern neo-vitalism, and to the view of consciousness set forth by Bergson in his *Matter and Memory*.

Second only to that of James and Bergson is the influence exerted by the German idealist Rudolf Eucken, winner of a Nobel prize in 1908, professor at Jena, and during the present year exchange professor at Harvard. Two translations of his works have recently been added to a list already long, *Life's Basis and Life's Ideal* (*Die Grundlinien einer neuen Lebensanschauung*), and *The Truth of Religion* (*Die Wahrheitsgehalt der Religion*). The wide interest in his spiritualistic message has been greatly quickened by his personal charm and eloquence. The idealistic tendency appears also in two notable books, both composed of lectures delivered at Scotch universities on the Gifford foundation. *The Realm of Ends, or Pluralism and Theism*, by James Ward, represents that phase of idealism recently named "personal idealism," in which the manyness and independence of individuals is emphasized, and the unity of the world is made ideal and prospective rather than original and basal. *The Principle of Individuality and Value*, by Bernard Bosanquet, is a revival of monistic idealism, with emphasis on the manifold individuation and living immanence of the absolute spirit. Both books are philosophical masterpieces, rounded into philosophies of life tinged with the personalities of their eminent authors.

The influence of James, Bergson, and Eucken, however, is possibly less significant of the future development of technical philosophy than the "realistic" movement. This movement

is so named from its central doctrine, which asserts the independent reality of the extra-conscious world against the idealistic claim for the universality of consciousness. The most eminent representative of this movement is the English mathematician and philosopher Bertrand Russell. This writer's *Problems of Philosophy* sets forth a dualistic or phenomenalist realism in which "sense-data" is made dependent on the relation between the sense organs and a physical object that is not immediately presented, but is known only by scientific "description." In this doctrine the nature of consciousness remains obscure. The immediate objects of consciousness, with which the mind is "acquainted" stand in a unique relation to an undefined entity, the self. An American variety of realism is represented by *The New Realism*, composed of an "Introduction" jointly written, and six essays written severally by E. B. Holt, W. T. Marvin, W. P. Montague, R. B. Perry, W. B. Pitkin, and E. G. Spaulding. According to the doctrine set forth in this book, physical objects, without forfeiting their independence, may enter into the mind and become its immediately presented content; while consciousness is identified with the relations in which such independent beings stand to a perceiving, acting or otherwise responding organism. The several essays of the book are devoted mainly to a discussion of the difficulties to which such a view gives rise. The book has a further significance as an instance of the coöperative method in philosophy. It consists in substance of results agreed on and arrived at after discussion and mutual criticism. It is the first fruit of *The Program and First Platform of Six Realists*, published by the same writers in 1910.

The place of realism in the history of philosophy is discussed in the "Introduction" to the aforementioned book, and in *Present Philosophical Tendencies*, by R. B. Perry. The latter book contains an examination of naturalism, idealism, pragmatism, and realism as the four leading tendencies of the day—naturalism and idealism being recent phases of older

movements, pragmatism and realism being peculiarly characteristic of contemporary thought. All four are regarded as tendencies in that they are complete philosophies, having their applications to life and to religious belief. Other books belonging to the realistic trend of thought are G. S. Fullerton's *The World We Live In*, a peculiarly well-written polemic against Berkeleyan and Kantian idealism by one who styles himself "the champion of everybody's world"; and J. E. Boodin's *Truth and Reality*, an introduction to the theory of knowledge in which the influence of James is especially marked.

Logic.—There has been an exceptional amount of activity in the field of logic during the past year, due mainly to the general discrediting of the traditional logic, and the rivalry among the innovators. "New" logic is the order of the day; but among the new logics there is much variety and divergence. The first of the new logics to establish itself was the neo-Hegelian logic, purporting to be a study of the universal thought-process, a logic philosophical in its scope and method, and closely allied with the idealistic theory of knowledge. This tendency is represented by B. Bosanquet's *Logic, or the Morphology of Knowledge*, which has recently appeared in a second edition. A second type of new logic aims to employ the exact and symbolic method of mathematics. It purports to be not a study of thought but of the most abstract entities, such as propositions, relations, etc. Such a logic coincides with the philosophy of mathematics, or the attempt to set forth the more fundamental concepts and postulates on which mathematics depends. This tendency is represented by the important work of A. N. Whitehead and B. Russell entitled *Principia Mathematica*. In America the work of K. Schmidt ("Studies in the Structure of Systems," *Journal of Philosophy*, April, June, Aug., 1912) and of the mathematicians E. V. Huntington and O. Veblen (monographs published in a volume entitled *Modern Mathematics*, edited by J. W. A. Young) are of the same type. A third type of new logic is frankly psychological. This point of view is represent-

ed by F. C. S. Schiller's recent volume entitled *Formal Logic: A Scientific and Social Problem*. The title is misleading in that it is the aim of the book to demonstrate the futility of formal logic and to replace it with a "psycho-logic" that shall be concrete and pragmatic. A union of the second and third types is found in the important work of C. Mercier entitled *A New Logic*. Logic is defined by this writer as the science of propositions, together with the science and art of reasoning. Over against all these innovating logics stands the neo-Scholasticism of the Roman Catholic Church, represented by P. Coffey's admirably written *Science of Logic*, a recent attempt to rehabilitate the Aristotelian logic by extending it and applying it to the new problems.

Ethics.—The only noteworthy feature of work in this field of philosophical inquiry is the lack of interest and originality. W. R. Sorley's well-written little booklet, entitled *The Moral Life*, is no more than a popularization of traditional views. Neither the French anthropological and sociological movement nor the German psychological and epistemological movement has deeply influenced American ethics; nor since the work of Hobhouse and Westermarck has any publication of importance in the field of ethics appeared in England. American ethics consists of either the applied ethics of to-day or the theoretical ethics of yesterday.

Æsthetics.—There is no record of American or English work in this field that can compare with contemporary German work. *Beauty and Ugliness, and Other Studies in Psychological Æsthetics*, by Vernon Lee and C. Anstruther-Thomson, is half psychology, and in this is not original, and half art criticism. Kant's *Critique of Æsthetic Judgment* has been translated with notes and introductory essays by J. C. Meredith. The translation is more readable than former translations; the translator's own contributions are textual criticism and not æsthetic theory. H. H. Britan's *Philosophy of Music: A Comparative Investigation to the Principles of Musical*

Æsthetics, is also deserving of mention.

Philosophy of Religion.—*Sources of Religious Insight*, by J. Royce, being the Bross Lectures for 1911 at Lake Forest College, is a fresh restatement of the author's philosophy of loyalty. The most important work of the year in this field is W. E. Hocking's *The Meaning of God in Human Experience*, an original and scholarly defense of religious mysticism. (See also "Psychology of Religion," *supra*.)

History of Philosophy.—There is still a comparatively small amount of work done in this field by American philosophers. The most important contribution of the year is a series of articles (in the *Philosophical Review*, Jan., May, Sept., 1912) by A. O. Lovejoy, on *The Problem of Time in Recent French Philosophy*. These studies throw much light on the relation of contemporary thinkers such as James and Bergson, to earlier French thinkers such as Renouvier and Pilon. B. A. G. Fuller's *The Problem of Evil in Plotinus* is valuable both for exposition and for criticism. Somewhat outside the lines of technical philosophy, but not for that reason less valuable, is the recent book of H. O. Taylor, entitled *The Mediæval Mind: A History of the Development of Thought and Emotion in the Middle Ages*. This book offers an admirable account of the general and pervasive ideas that appeared in the life, common belief, and art of the Middle Ages, as well as in its philosophy. In England there has appeared an account of *English Philosophers and Schools of Philosophy*, from Bacon to our own day, by J. Seth. But for the most part historical work in England has been confined to translating and editing. Boutroux's studies of Socrates, Aristotle, Böhme, Descartes and Kant, have been translated from the French. There are new translations of Hegel (*Hegel's Doctrine of Formal Logic*, by H. S. Macran) and of Descartes (Vol. I of his *General Works*, by E. S. Haldane and G. R. T. Ross). It is interesting to note the appearance of a three-volume English edition of Rosmini's *Theodicy, or Essays on Divine Providence*.

XXX. THE MEDICAL SCIENCES

ANATOMY AND SURGERY

ADRIAN V. S. LAMBERT

Anatomy.—In Anatomy during 1912 the most notable advances have been dependent on the new and improved methods of growing living tissues *in vitro*, by the method devised by Harrison of New Haven and developed by Carrel (see also *Physiology and Pharmacology, infra*).

In the fluid element of the blood, the plasma, freed from all cellular elements, are placed pieces of living tissue, the entire culture being kept at normal body temperature. The growth of the tissue can be watched under a microscope. Whipple and McWhorter in New York have been able to watch the growth and development of the chick. They take the germinal area in the egg and place it in the plasma of chicken's blood. This is then kept in a chamber heated to the temperature normal for the chicken. The germinal area develops and the young embryo can be seen to undergo the successive changes consequent to its growth. These changes have been followed in embryos of six somites, or about 30 hours old, up to those of so many somites that it is impossible to count them. The development of the heart and the circulation has been studied especially. The heart has been followed from its earliest state, when it is a non-contracting single straight tube, through the different stages during which it becomes a tube bent upon itself and finally a many chambered organ.

The time at which the heart commences to pulsate has been determined at about the thirty-third hour of incubation in an embryo of 10 to 12 somites. This occurs several hours before the circulation of the

blood has become established, which does not occur until the thirty-seventh hour in an embryo of 14 to 16 somites. The blood is formed in isolated areas, known as blood islands, and the blood vessels develop as detached tubes which later break into one another to form the complicated anastomosing system as found in the adult individual. During this period of observation the development of the central nervous system can be observed, and the successive changes from the primary neural groove into the primary vesicles of fore, mid, and hind brain watched.

Surgery during the year 1912 made many notable advances along lines which have been in the experimental stage. The transplantation of living tissues from one part of the body to another has been perfected and given a practical application in various ways. Carrel reported, at the meeting of the American Medical Association, his results with the transplantation of organs and tissues. By means of an improved technique in the suture of the blood vessels he has been able to transplant organs, e. g., kidneys, from one animal to another. The transplanted organ will functionate for a time thereafter, but the permanency of the engrafted organ is not as lasting as was hoped for at first. A calcareous change takes place in it and it gradually loses its function. He has also been able to graft from one animal on another legs, ears, and other peripheral parts. These have grown more successfully than the more delicate tissues, e. g., of the organs. The entire procedure is dependent for its success on a very rigid and perfect

technique and asepsis, as a minimum of infection will cause the death of the graft and so vitiate the result.

Carrel in each instance has isolated the main arterial and venous supply to the graft, and by means of vessel suture has united them to the cut ends of similar vessels in the animal which is subsequently to nourish it. In this way the lumen of the vessels are reestablished and blood is supplied directly to the graft.

At the same meeting in Atlantic City, Dr. Murphy, of Chicago, showed cases in which he had successfully grafted bones and joints into human beings. This has been previously done with success by Lexer in Germany. These bone grafts differ essentially from the work of Carrel. There is no suture of blood vessels; the engrafted tissue is simply united to the healthy bone and acts as a scaffolding upon which the new bone thrown out in repair may grow to bridge over the gap and form a permanent support. The procedure has been employed by many operators to

stimulate the growth of bone in old ununited fractures and in reestablishing mobility to stiffened joints.

Albee in New York has devised a new operation by which he hopes to cure Pott's disease, or tuberculosis of the spine. Here the morbid process is situated in great part in the interior portion or bodies of the vertebrae. These are slowly destroyed and become absorbed, and motion between them and pressure on them are patent elements which favor their destruction and the formation of kyphosis or "humpback." Albee, to prevent the action of these two forces, splits the spines of the diseased vertebrae longitudinally and inserts between them a piece of tibia. This he intends to act as a splint for the affected vertebrae and so prevent motion and pressure between them. Hibbs of New York has devised an operation for the same purpose which consists in causing an ankylosis between the transverse processes of the diseased vertebrae, and thus accomplishes the same purpose.

PHYSIOLOGY AND PHARMACOLOGY

S. J. MELTZER

Blood Clotting.—The coagulation or clotting of the shed blood is a very intricate process which has attracted a great deal of attention of physiologists and was, during the year, the subject of many investigations. The clot consists essentially of fibrin, an insoluble protein, which does not exist as such in the circulating blood. It is now generally assumed that three elements enter into the formation of fibrin: fibrinogen, calcium, and thrombin; the latter is being considered by many to be a fibrin ferment. Fibrinogen, a soluble protein, and calcium are present in the blood within the circulation; thrombin, however, exists in the circulating blood only in a precursory state, as prothrombin or thrombogen, and therefore some additional element has to enter into the combination before fibrin can be formed. This element is furnished by the body cells. In mammals this factor is derived from the red blood corpuscles, which break down in considerable numbers soon after the

blood is shed, or rather from the disintegrating blood platelets which appear in very large numbers whenever red blood corpuscles break down. Animals lower than mammals do not possess blood platelets and clotting takes place only when the blood is permitted to come in contact with some of the body tissues. When, for instance, the blood of birds is permitted to flow from an artery through a clean cannula directly into a clean receptacle, avoiding any contact with the tissues of the animal, the blood may remain fluid for a long time. It clots, however, as soon as some tissue or an extract of it is added. That element of the tissue is called "thromboplastic substance," or, as Howell calls it, "thromboplastin." In recent years, especially through the influence of the investigations of Morawitz and of Fuld and Spiro, the theory has been widely accepted that the action of thromboplastin is in the nature of a kinase, it activates the prothrombin of the blood into thrombin, and,

with Morawitz, the thromboplastic substance is frequently designated as "thrombokinase." According to this theory, the blood within the normal circulation remains fluid because of the absence of the thrombokinase. When the blood is shed the disintegrating blood platelets and the body tissue furnish this activator which converts the prothrombin into thrombin and the process of fibrin formation or clotting can take place.

Howell, who with several pupils studied this problem and worked out methods for the better preparation of the various substances under consideration, brought forward during the year a new and interesting theory which he supported with careful quantitative experiments. According to this theory, the combination of fibrinogen, prothrombin and calcium, all of which are present in the circulating blood, is sufficient for the prompt formation of fibrin. The blood, however, remains fluid by the presence within the blood of another element. This element is antithrombin, which prevents the prothrombin from getting into combination with calcium and fibrinogen. The thromboplastic substance of the tissues contributes, however, to the formation of fibrin, by its ability to fix the antithrombin; it thus sets free the prothrombin which may now combine with calcium and fibrinogen to fibrin. It has been shown by other experimenters that the mammalian blood contains antithrombin, but very little importance has been attached to it. Howell has shown that the blood of animals lower than mammals contains more of antithrombin than mammalian blood. The same is true also of peptonized blood, that is, blood of mammals into the circulation of which Witte's peptone has been injected with rapidity. By quantitative experimentation with the prepared constituents of the blood and tissues, as well as with hirudin, an anti-coagulant prepared from the heads of leeches, Howell seems to have established his contention that the action of the thromboplastic substances consists in liberating the prothrombin from the grip of antithrombin in a quantitative manner. References are:

HOWELL, W. H.—"The Role of Antithrombin and Thromboplastin (Thromboplastic Substance) in the Coagulation of Blood." (*Amer. Jour. of Physiol.*, XXIX, 187, 1911-1912.)

"The Nature of Action of the Thromboplastic (Zymoplastic) Substance of the Tissue." (*Ibid.*, XXXI, 1, 1912.)

CECIL, H. L.—"Note upon the Preparation of the Thromboplastic Substance (Thromboplastin) from Tissues." (*Ibid.*, XXIX, 156, 1911-12.)

DAVIS, DANIEL.—"The Intravenous Injection of Thrombin." (*Ibid.*, p. 160.)

BAYNE, JONES, and STANHOPE.—"The Presence of Prothrombin and Thromboplastin in the Blood Platelets." (*Ibid.*, XXX, 74, 1912.)

Circulation.—The conductive system has been the subject of several investigations. Moorhouse (*Amer. Jour. of Physiol.*, XXX, 358, 1912) removed the sino-auricular node in suspended and perfused hearts of dogs and comes to the conclusion that the results of such experiments do not indicate the specificity of that tissue as regards the determination of the auricular rate.—Sansun (*ibid.*, p. 421) stimulated the sino-auricular node of the hearts of dogs and cats and found, like Engelmann for frogs, that the compensatory pause following the auricular extra-systoles is much shorter than the one following the ventricular extra-systoles produced by stimulation of the auricle. He found, however, that in mammals the ventricular compensatory pause is also slightly shorter than the sum of two pauses.—Erlanger (*ibid.*, p. 395) studied in beef hearts the irritability of the "Purkinje tissues" (which may include nervous tissue) in the left ventricle which is a continuation of the conductive bundle in the septum, and found, in agreement with the supposition of Tawara, that the transmission of the stimulus is in this tissue rather more rapid than in the ordinary cardiac muscle tissue. He gives as his opinion that the A-Vs interval may be due to a latency occurring at some point of the transition of one type of tissue to another.—Erlanger (*Jour. of Exper. Med.*, XVI, 452, 1912) also discovered the important fact that stimulation of the sinus in mammals is capable of abolishing auricular fibrillation, and in conjunction with cardiac massage may restore to activity a

failing heart. By the aid of a special electrode he was successful in several experiments in bringing back to normal life animals killed by chloroform or asphyxia.

In turtle's heart the vagus nerves do not innervate the ventricles and the action of the right vagus is exerted upon the right auricle, while that of the left depresses only the conductivity and the strength of the beats of the left auricle but not its rate. Garrey (*Amer. Jour. of Physiol.*, XXX, 451, 1912) found that in artificial, partial block produced by compression, stimulation of the right vagus instead of causing a still greater reduction in the rate of the ventricular beats, may cause an acceleration, on account of the slowing of the auricular beats, which permits the summation of the weak impulses to become an effective beat. On the other hand, stimulation of the left vagus might cause a slowing of the ventricular beats or even a complete block by the depression of the strength of the left auricular beats.—The impulses in the segmented tubular heart of the *Limulus* (horseshoe crab) are conducted exclusively through nervous connections (neurogenic, Carlson) of which there are three, one in the middle of the dorsum and one on each side. By means of various degrees of compression of these nerves Garrey (*ibid.*, p. 283) found that lateral nerves exert a homolateral action, that is, after compressing a lateral nerve, only the part of the segment on the corresponding side becomes paralyzed. This paralysis, however, is only temporary. The compression of the middle nerve affects the entire segment. The completeness of the block produced by any degree of compression depends upon the strength of the impulse in the main ganglion and the degree of irritability of the segmented tissues.—The difference in the action of both vagus nerves was observed by Cohn (*Jour. of Exper. Med.*, VI, 49, 1912) also in dogs. The hearts were perfused *in situ*. In general the right vagus affected more the auricles, and the left more the ventricles.—Observations made by Robinson and Draper (*ibid.*, p. 14) upon children suffering from chronic heart disease in which the stimula-

tion of the vagus nerves was caused by pressure led them to the conclusion that in some cases there is a definite difference between the action of the right and the left vagus. The control of the rate seemed to predominate in the right while the control of the stimulus conduction from auricles to ventricles seemed to predominate usually in the left vagus nerve.—Meek and Eyster (*Amer. Jour. of Physiol.*, XXX, 1912) have established by means of a sensitive string galvanometer the correctness of the statement of Gaskell, doubted by many investigators, that stimulation of the vagus is accompanied by a positive electrical variation in the heart of terrapins. In their experiments, too, the innervation of the vagus seems to be mostly homolateral.—Perfusion of the heart with sodium-chloride solutions abolishes the cardio-inhibitory effect upon the vagus. Hagan and Ormond (*ibid.*, p. 105), who experimented upon terrapins' hearts, and who state that in most cases the inhibitory fibers were found in the right vagus, found that the addition of very small doses of calcium chloride causes a recovery of the inhibitory action. The addition of potassium chloride alone causes no recovery, but its presence is capable of making a subminimal dose of calcium chloride effective.

In the writings of Yandell Henderson it was claimed that the auricle serves merely as a reservoir, its contractions exerting no influence whatsoever upon the filling of the heart and indirectly upon the blood pressure. Gesell (*ibid.*, XXIX, 32, 1911-1912) says that the plethysmographic method employed by Henderson was not suitable for the accurate study of volume changes of the ventricles, for the reason that the movements of the base of the heart, its most capacious part, are not taken into account. A study of the problem by adequate methods has shown definitely that auricular contractions play an important rôle in determining the ventricular output.

Sollmann and Pilcher (*ibid.*, p. 100) studied the action of the vasomotor center by means of outflow from transferred isolated organs which had no other connections with

the body except by their nerves. A diminution of the outflow from the organ they took as evidence of a vasomotor constriction. They found that in asphyxia the outflow continues to be restricted even after a decided fall of the blood pressure, in fact even for some time after death. They conclude that the CO_2 of the blood is the cause of the central vasomotor constriction but that the systemic fall of blood pressure is due to cardiac failure.—Sollmann and Brown (*ibid.*, XXX, 88, 1912) observed that traction of the central end of the carotid artery causes invariably a marked fall in blood pressure. The fall is purely of cardiac origin, the afferent path is through the carotid plexus, while the efferent path has not been discovered in any of the cardiac nerves.—Lombard (*ibid.*, XXIX, 335, 1911-1912) found that by placing a drop of glycerine or of a transparent oil to the human skin, and examining it under a microscope in a strong light, a fine picture of the superficial blood vessels may be obtained. On the basis of this observation Lombard developed methods by means of which he studied the disappearance of the blood from the visible capillaries under pressure and ascertained some new data regarding the capillary pressure.

Cultivation of Tissues in Vitro.—In the last few years a notable advance has been made in the cultivation of animal tissues in culture media outside of the animal body. The progress is coupled with the name of Alexis Carrel, whose work in conjunction with Burrows stimulated many investigators to activity in this new field. Our knowledge of the subject is not older than about 15 years, which period may be divided in three stages:

1. In 1897 Leo Loeb, an original investigator of considerable merit, reported that he succeeded in cultivating tissues outside of the body in coagulated blood serum or in agar. His work was not appreciated and he published his results in a private pamphlet, with the result that it remained practically unknown. Not possessing the advantage of working in a regular laboratory he conceived the idea of using the animal as a

thermostat. Accordingly he imbedded animal tissues in blocks of coagulated blood serum and of agar and buried these blocks in the subcutaneous tissues of animals. The results of these investigations were published in 1902 in the *Archiv für Entwicklungsmechanik*, a journal widely known among modern biologists. Some writers on the subject of the cultivation of tissues *in vitro*, who are only familiar with the last mentioned publication of Loeb, point to it as evidence that this author cultivated tissues only within the body, which is a misapprehension of the facts in the case. It can be safely claimed that Loeb was the first investigator who conceived the ingenious plan of cultivating tissues in media outside of the body.

2. No further work was done on the subject until 1907, when Harrison, a careful and resourceful biological investigator, began to study the problem of growth of nerve fibers. His chief object was to arrive at a decision between the theories of His and of Hensen; that is, whether the axis cylinder grows out and forward from the cell body, or develops locally from the nerve sheath. He studied the problem on undifferentiated embryonic tissue of the frog. At first, perhaps following in the footsteps of Loeb, he imbedded the tissues in coagulated blood in the subcutis of frogs. Later he imbedded the tissue in a hanging drop of lymph which coagulated. Harrison established that in a hanging drop of coagulated lymph undifferentiated tissues may live for a long time outside of the body and may differentiate into specific tissues. He recognized that asepsis as well as the solidity of the culture medium are indispensable requirements for the success of the method. It seems that Harrison established only the long preservation and the differentiation of embryonic tissues in external media; he has not observed, however, the development and growth of new cells in these artificial media.

3. The studies of Carrel on the nature of latent life, his work on transplantation and the use of tissues kept in cold storage, and especially his investigations on regeneration of nerves,

made him induce the Rockefeller Institute to send his assistant, M. T. Burrows, in April, 1910, to Harrison for the purpose of studying the growth of tissues in artificial media. Burrows, while working under Harrison, found that embryonic tissue of warm-blooded animals (chick) may also be made to grow in artificial media (see *Anatomy and Surgery, supra*); that blood plasma, which can be obtained in much larger quantities than lymph, is a very suitable medium for such purposes, and that the growth of mesenchym tissue in the artificial media consists in the wandering out of preëxisting tissue cells which then multiply by mitotic division. On Burrows' return to the Rockefeller Institute in the following September, Carrel in conjunction with him began to study the growth of tissues *in vitro* on a large scale. They developed a method of culture on a large plate which permits the growth of large quantities of tissue. They found that various tissues of adult mammals may also grow luxuriously in artificial media, and that by transplantation from the primary culture the growth may continue through secondary and tertiary cultures. Later they found that diluted plasma is more favorable to the growth of new tissue than pure plasma.

The work of Carrel and Burrows stimulated other laboratory workers to investigate the subject. Lambert and Hanes found, as did also Carrel and Burrows themselves, that the tissues of malignant neoplasms of animals grow luxuriously in artificial media. The same authors discovered that tissues grow well also in media prepared from alien plasma. M. R. and W. H. Lewis found that embryonic tissue may also grow in salt solutions. According to Harrison, it is the cover-glass slip which in fluid media supports and guides the growth of the tissues. Carrel and Ingebrigtsen found that the addition of foreign red blood corpuscles to tissue-growing artificial media may give rise to the development of hemolysins in these media; in other words, the addition of an antigen may give rise to the development of antibodies in the artificial culture media. By successive

alternating changes from plasma to serum, by means of which an early onset of "senility" of the cultivated tissues was prevented, Carrel succeeded in 1911 in making as many as 18 transplantations and the cultivated tissue lived 85 days; fragments of hearts pulsed rhythmically at the beginning of the third month of their life *in vitro*. In an apparatus which permitted the continuous supply of fresh serum Burrows has studied the growth and activity of pieces of hearts of chick-embryos of all ages and of newly hatched chickens. Active growth and regular rhythm have been observed in these cultures for 30 days. Pieces taken from the auricle beat more readily and in a more accelerated rhythm than those taken from the ventricle. Burrows points out that these observations support the myogenic theory of the origin of the heart beat. (See also *Anatomy and Surgery, supra*.)

Adrenin Studies.—The striking actions of extracts prepared from adrenal glands continue to attract the attention of many investigators. We shall preface the report by a brief remark on the nomenclature. There is an obvious necessity of distinguishing by different designations the natural product of the adrenal glands and the commercial products prepared in various ways and put on the market under various names. Schäfer and his followers employ for the natural product the term "adrenin." In this country, however, apparently out of consideration for John Abel, who was the first one to prepare a practically pure crystalline product and who named it "epinephrin," this term is now generally employed to designate the adrenal extract in general. The vast majority of the workers in this country employ in their investigations "adrenalin," a product prepared according to the formula of Takamina.

Adrenal extract causes an inhibition of the peristaltic movements of the intestines. Cannon and Hoskins (*Amer. Jour. of Physiol.*, XXIX, 274, 1911-1912) employed this action for the estimation of the amount of adrenal secretion in the blood of cats. The blood was obtained by a catheter introduced through the femoral vein

and pushed into the interior vena cava until the lateral opening of the catheter was opposite or above the adrenal veins. They found that asphyxia and sensory stimuli increase the adrenal secretion while hyperpnea has no such effect.—Injections into animals of adrenal extracts cause glycosuria. Cannon, Shohl, and Wright (*ibid.*, p. 280) found by the above mentioned method that cats, when excited by being tied on a holder, or caged, or being barked at by a dog, develop temporary glycosuria, which Cannon designates as "emotional glycosuria." When the adrenals are removed excitement fails to produce glycosuria.—According to Langley and Dickinson, nicotin in smaller doses causes a stimulation of the sympathetic ganglia while larger doses paralyze them. Cannon, Aub, and Binger (*Jour. of Pharmacol. and Exper. Therapeutics*, III, 379, 1911-1912) found that certain doses of nicotin, when injected into a cat, cause an increase of the adrenal secretion, as tested by the previously mentioned method, which they explain by the assumption that the employed nicotin dose stimulated the sympathetic nerves which control the adrenal secretion.—Hoskins (*Amer. Jour. of Physiol.*, XXIX, 363, 1911-1912) states that adrenalin in dilutions as great as 1 to 400 million is sufficient to cause a relaxation of the intestines, while still greater dilutions cause rather a perceptible increase of the tonus or of the peristaltic contractions.

The various effects of adrenal extracts have been variously elaborated as methods for the discovery of the presence of adrenin in animal fluids, especially in the blood of patients suffering from diseases like nephritis or Graves' disease. Stewart pointed out in an article published in the previous year that the use of one method alone necessarily leads to errors, and he has recommended the employment of two such methods which show opposite effects, for instance, strips of the uterus, the activity of which is increased by epinephrin, and of the intestines, the contractions of which are inhibited. Now he reports (*Jour. of Exper. Med.*, XV, 547, 1912) the results of such a

study with these two methods. He could not establish the presence of adrenin in the blood of nephritics or of patients suffering from Graves' disease. In disagreement with some other investigators he found no adrenin in the veins from the adrenals when these organs were not handled. After massage, however, or stimulation of the splanchnic nerves the presence of adrenin in the blood from the adrenal veins could be established. Differing from Cannon, he could not find adrenin in the blood from the inferior vena cava. But Stewart studied it in dogs while Cannon's observations were made on cats. In the course of the year an important observation was made by O'Connor in the Pharmacological Laboratory of Heidelberg which invalidated many investigations which were carried out with blood serum. He found that in the process of clotting substances became liberated, and are present in the serum, which, in some respects, act like adrenal secretions. This, however, does not apply to blood plasma, which acts in many respects differently from the serum. Stewart (*ibid.*, XVI, 502, 1912) in testing this point on the two preparations which he employed in his investigations found that here serum and plasma act in an identical manner.

Park (*Jour. of Exper. Med.*, XVI, 532, 1912) studied the relaxing action of epinephrin upon strips from the coronary arteries of the heart of the ox and worked it out as a testing method.—Janeway and Park (*ibid.*, p. 541) employed in their studies simultaneously strips from the carotid and the coronary arteries, the former responding with a contraction and the latter with a relaxation to bathing with a solution containing adrenalin, thus complying with the requirement of Stewart to employ methods which have opposite effects. They found that defibrinated blood caused in both arteries similar effects, while with plasma the effect was opposite. By using plasma of nephritis they could not discover the presence of epinephrin in the blood.—Ott and Scott (*Jour. of Pharmacol. and Exper. Therapeutics*, III, 625, 1912), using the method of Cannon, report that intravenous injections of various glan-

dular extracts (thyroid, parathyroid, thymus, infundibulum, pineal, pancreas, ovarian, and orchitic extracts) increase the adrenal secretion.

After the removal of the superior cervical sympathetic ganglion an injection of adrenalin causes a maximal, long lasting dilatation of the pupil on the corresponding side (Meltzer and Auer). Joseph and Meltzer (*Amer. Jour. of Physiol.*, XXIX, 1911-1912; *Proc. of the Amer. Physiol. Soc.*, XXXIV) found now that stimulation of the peripheral end of a splanchnic nerve causes a dilatation of the pupil on the side on which the mentioned ganglion has been removed—an evidence that the splanchnic nerve controls the adrenal secretion.

Park (*Jour. of Exper. Med.*, XVI, 558, 1912) found that bathing of a ring cut out from a bronchus in a solution of adrenalin causes a relaxation of that segment.

Adrenal extract may be kept in blood and other animal fluids for a long time without losing its effects. Meltzer (*Proc. of the Soc. for Exper. Biol. and Med.*, IX, 27, 1911-1912) found that human spinal fluid is capable of perceptibly reducing the effects of adrenalin.—Auer and Meltzer (*ibid.*, p. 79) established that intraspinal injection of adrenalin into monkeys causes a gradual but a high and sustained blood pressure definitely different in character from that obtained by intravenous as well as by subcutaneous injections.

We may add here some observations made on pituitrin, an extract from the infundibular portion of the hypophysis, which acts in most respects similarly to the adrenal extract. Auer and Meltzer (*ibid.*, p. 100) found that after an intravenous injection of pituitrin stimulation of the depressor nerve loses temporarily its characteristic vasodilating effect.—Meltzer (*ibid.*, p. 103) found that in gangliectomized rabbits injections of pituitrin, in contrast to the action of adrenalin, have no dilating effect upon the pupil. The pupil of the enucleated frog's eye, however, responds in most cases with dilatation to bathing with pituitrin.

Gastro-intestinal Canal.—According Cannon (*Amer. Jour. of Physiol.*

XXIX, 238 and 251, 1911-1912) the antiperistaltic movements of the proximal part of the colon and the gastric peristalsis of the stomach are identical in so far as in either case no intense inhibition wave runs ahead of the wave of the contraction and both contractions are not affected by atropin. In either case the essential requirements for the occurrence of these rhythmical contractions are: a state of tonus of the neuromusculature, an internal tension (increased intragastric and intracolonic pressure), and a tonically contracted, rhythmically pulsating ring of the viscus. In the colon this ring has a fixed point. In the stomach, at the beginning of the digestion, that ring has a changeable place in the fundus; later that pulsating ring is fixed at the site of the cardiac incisure. The refractory period is a factor in the rhythmicity of the pulsation.—According to Cannon (*ibid.*, XXX, 114, 1912) the entire gastro-intestinal canal, i. e., œsophagus, stomach, small intestines and colon, exhibit that which Bayliss and Starling termed as the law of the intestines, namely that a stimulation causes a contraction above and a relaxation below. This coördinate response is under control of the plexus myentericus and Cannon therefore designates it as "Myenteric reflex." But the small intestines may, under certain conditions, and influences, exhibit also antiperistaltic movements. Furthermore, circular incisions which interfere with the myenteric reflex and which therefore abolish the peristaltic movement, do not interfere with the segmentation. These localized contractions, as well as certain forward and backward movements which are not complicated by inhibition, depend, according to Cannon, upon local centers. He suggests for the normal peristaltic movement the term "diastalsis," while for movements in which the myenteric reflex has no share he suggests for the forward movement the term "katastalsis," and for the backward movement "anastalsis."

For the cardia, Kronecker and Meltzer showed a long time ago that during the act of swallowing the cardia becomes inhibited and relaxes,

and that the relaxation increases with the rapid repetition of the acts of deglutition. Cannon and Lieb (*ibid.*, XXIX, 267, 1911-1912) have shown now that this is true also for the fundus of the stomach.—By measuring the intragastric pressure in cats and in a human being they found that during repeated deglutitions the pressure may fall to zero.—By introducing a tube armed with a rubber balloon into the stomach of a human individual and connecting the tube with a registering apparatus, Cannon and Washburn (*ibid.*, p. 436) have established that, coincident with hunger pangs, the stomach and the lower end of the œsophagus show contractions. They conclude that these contractions are the cause of the sensation of hunger.—The often discussed problem whether pepsin and rennin are separate and distinct enzymes was studied by Burge (*ibid.*, p. 330) by passing through a solution containing both enzymes a direct electric current of low amperage for 25 hours. He found that the solution lost its peptic power completely while the action of rennin remained apparently unchanged.

Diverse Physiological and Pharmacological Subjects.—In a study of the overpressure method used in intrathoracic surgery, Auer and Meltzer (*Jour. of Exper. Med.*, XIV, 569, 1911) found, that, when both pleural cavities are wide open, the respiratory function is accomplished only by the movements of air in the lower and posterior part of the lower lobes of the lungs which are in direct contact with the posterior part of the diaphragm; when these parts are detached from the diaphragm the animal dies in a very short time. Under the overpressure method the respiration is sustained only by a small fraction of the normal respiration.

As the cause of the anaphylactic death in rabbits, Auer (*ibid.*, p. 476) finds anatomical and functional changes in the heart—decrease in translucency, change in consistency, and rapid loss of irritability.—In studying the effect of lethal doses of digitalis preparations upon rabbits, Auer (*Amer. Jour. of Physiol.*, XXIX, 1911-1912; *Proc. of the Amer. Physiol. Soc.*, XVI) found that the

heart shows anatomical and functional changes similar to those which occur in the anaphylactic death of these animals.—Abel and Macht (*Jour. of Pharmacol. and Exper. Therapeutics*, III, 319, 1911-1912) discovered the facts that the secretions of the parotid gland of a tropical toad (*Bufo aqua*) contains two very active pharmacological principles. One is identical with epinephrin, of which the crude venom contains nearly seven per cent. The other principle acts strongly on the heart, the cardio-inhibitory center, and the musculature of the blood vessels. The authors named it "bufagin"; they class this drug with the most efficient members of the digitalis series.—Robertson and Burnett (*ibid.*, p. 635) found that by repeated subcutaneous injections of sodium citrate, which is very toxic, rabbits acquire a degree of immunity to this salt, which they interpret as a tolerance to the deprivation of the tissue calcium. The authors further made some experiments which lead them to assume that the chief toxic action of the sodium citrate is upon the cerebellum.—In experiments with intravenous irrigations of the gastrocnemius of the frog with M/8 solutions of sodium chloride and calcium chloride, Joseph and Meltzer (*Amer. Jour. of Physiol.*, XXIX, 1, 1911-1912) found that the paralysis of the motor nerve endings which follows the prolonged irrigation with sodium chloride is rapidly restored by a subsequent irrigation with a very small dose of calcium chloride. On the other hand, the similar paralysis which follows the primary irrigation with calcium chloride can also be rapidly restored by a subsequent irrigation with a small dose of sodium chloride. It cannot, therefore, be said, as was claimed by two contending schools (Howell and Loeb), that sodium decreases and calcium increases, or, on the contrary, sodium increases and calcium decreases, the irritability; both ions are apparently simply mutually corrective to an abnormal increase of their respective effects.—Iodosobenzoate and iodoxybenzoate readily give up oxygen and are probably capable of oxidizing the cells. Loevenhart and Grove (*Jour. of Pharmacol. and Exper. Therapeu-*

tics, III, 101, 1911-1912) studied the pharmacological action of the soluble sodium salts by intravenous injections. Sodium iodosobenzoate is somewhat more active than iodoxybenzoate salt. Their effect is upon the centers of the medulla oblongata. They cause a fall of blood pressure and apnoea; the cardio-inhibitory center is not affected.—Hydrocyanic acid is known to be poisonous by the depression of the oxidation of the cells. On the basis that sodium iodosobenzoate gives up readily oxygen to the cells, Loevenhart and Grove (*ibid.*, p. 131) administered to rabbits both drugs simultaneously, and have established that a definite antagonism exists between hydrocyanic acid and sodium iodosobenzoate with regard to the respiratory center.

Barbour and Abel reported that acid fuchsin, which is hardly toxic for the frog, causes convulsions even in small doses in animals whose anterior part of the brain has been previously removed. Joseph and Meltzer (*ibid.*, p. 183) found that a similar effect is produced by cardioectomy. Here very small doses produce in a short time characteristic convulsions.—Hanzlik (*ibid.*, p. 387) studied the absorption of sodium iodide from the gastro-intestinal canal of animals. The absorption from the small intestines is better than from the stomach and colon. The main part is absorbed in the first 10 minutes; 25 to 50 per cent. remains unabsorbed; the extent of surface does not influence the percentage of absorption, and

only such a high concentration as 10 per cent. increases the absorption. Intravenous injections of sodium iodide exert no influence upon the degree of absorption of that salt from the intestines. An interesting fact is the observation that the absorption of sodium iodide from the intestines is restricted by the presence of sodium chloride in the same loop of the intestines, or even when the loops had temporarily had sodium chloride previous to the introduction of the solution sodium iodide.—In a series of experiments by Eggleston and Hatcher (*ibid.*, p. 551) it was established that apomorphine brings on vomiting by intramuscular and intravenous injections with much smaller doses than such as are effective by the administration through the stomach; that, when administered paraenterally the vomitus contains nothing of the drug, and that after removal of the entire gastro-intestinal canal and after cocaineizing oesophagus and pharynx, the intramuscular injection of apomorphin still brings on all the vomiting movements. This proves that apomorphin brings on vomiting by direct stimulation of the central vomiting mechanism.

The same authors (*Proc. of the Soc. for Exper. Biol. and Med.*, IX, 81, 1912) employed the method of evisceration in studying the action of digitalis and found that in 50 per cent. of their experiments this drug produced vomiting movements in eviscerated animals.

PATHOLOGY AND MEDICINE

ALEXANDER LAMBERT AND HARLOW BROOKS

Life and Growth of Animal Tissue Outside the Body.—Undoubtedly the most important discovery or research of the year has been that of Alexis Carrel, the details of whose work are discussed elsewhere in the YEAR BOOK (see *Physiology and Pharmacology, supra*). As indicative of the present tendency of medical research, it should be noted that the contribution of Carrel is essentially biological and physiological, that the methods of his research were surgical, and that, as to result, there is no branch of the

medical sciences which is not broadened and advanced by these remarkable studies, which have followed one after the other in a most simple and logical way until the most recent and almost revolutionary discoveries have been announced and verified. Hence it is that no adequate summary of the chief advances in medicine and pathology can be made for 1912 without acknowledging the value of Carrel's work in extending to a considerable degree the future possibilities of medicine.

Infantile Paralysis.—There has been no one disease condition in which greater or more important advance has been made during the past five years than in the study of infantile paralysis or acute poliomyelitis. Up to relatively recent times, the condition was scarcely recognized as an acute general febrile disorder and cases were usually diagnosed only when, after a short period of more or less malaise and fever, a child was suddenly found to be paralyzed. The epidemic character of the disease was in question and its infectious nature suspected only by a few. Most paralytic conditions resulting from it were attributed to injuries received at play or from careless nursemaids.

The disease appears both in sporadic or isolated cases and in an epidemic form. It is most frequent in children of between one and three years, but may occur at any age. It has been found rather more frequently in boys than in girls, but the influence of sex is not marked. It occurs mostly in the warmer months, but sporadic cases may develop at any time. The disease is usually introduced by an incubation period of from five to ten days, during which time the patient may complain of indefinite pains in the arms, legs, and back. The child is commonly tired and listless, disinclined to eat, and more or less headache is present. In some, especially sporadic, cases, no prodromal stage is present and the child goes to bed apparently well to wake in the morning with the fully developed disease.

Fever, with the usual accompanying symptoms of rapid pulse, exhaustion, and more or less mental disturbance, inaugurates the acute stage of the disease. At this time the disease picture is so nearly like the onset of the ordinary infectious diseases that the diagnosis is not usually made until sooner or later paralysis appears. The distribution of the paralysis is characterized by its irregularity. For example, a leg and arm of opposite sides may be found paralyzed, or perhaps both legs or both arms, a group of abdominal muscles, or the entire body up to the neck. The character and distribution of these paralytic symptoms indicate at once to the

physician that the seat of the disease process is in the gray matter of the spinal cord.

During the next few days the temperature usually begins to decline and the other symptoms of infection also disappear. The paralysis as a rule either remains stationary or spreads upward, involving perhaps the muscles of the neck and head. A further extension may cause paralysis of the respiratory centers and those of cardiac control, in which case death commonly soon follows, though not infrequently from some intercurrent terminal infection, such as a pneumonia.

In any case rapid atrophy of the diseased muscles takes place; except for this or for secondary disease conditions which may now appear, little change takes place until after two or three weeks, when a slow improvement of the degree and extent of the paralysis appears in favorable cases. The grade to which this takes place is very variable; at times almost complete restitution of muscle control and growth occurs, but more commonly a degree of paralysis persists which requires the most painstaking and persistent of skilled attention long continued to relieve or cure.

For years this paralysis has been mostly attributed to falls incurred through negligent nurses or to the other injuries incident to childhood, and the physician was not consulted until the paralysis and atrophy of the muscles had become well advanced. Hospitals for nervous diseases and for deformities have for years been crowded with the late results of the disease, which has caused a large percentage of chronic cripples. Usually these patients came so late under medical care that very little could be done to mitigate the results, though Sayre, Gibney, Frauenthal, and others, notably in this country, have accomplished a great deal in the way of massage and muscle and nerve training through various gymnastic methods, which, applied in the early stages of the paralysis, now result in almost miraculous cures.

The epidemic type of the disease sometimes seen and its character of onset indicate the probable infectious nature of the disease. Wickham in

1905 was the first to emphasize these phases of the disease, but no positive pathological or bacteriological evidence could be found to prove its infectious nature, though the increasing prevalence of the disease and the widespread interest in it caused very careful study by all observers.

Finally Landsteiner and Pepper in 1909 were able to reproduce the disease in monkeys by the inoculation of material taken from the diseased nervous tissues of patients dead of the disease. This important observation was promptly corroborated by Flexner and Lewis and by Strauss and Hüntoon in America. Study of the virus thus obtained showed that it could be perpetuated and transmitted indefinitely from monkey to monkey and has apparently ruled out the possibility of bacteriologic etiology. The causative agent or virus is a highly resistant, viable but unknown substance which is capable of passing through the pores of a porcelain filter; it thus belongs to the ultramicroscopic organisms and probably to the lowest forms of animal life. The virus may be weakened or attenuated very much, as is the case with that of rabies, and, as also in rabies, artificial immunity may be at least partially produced by the injection of ascending strengths of the attenuated virus. As yet this attenuated virus has been unable to check the progress of the disease in infected children.

The study of the disease now chiefly shifted to investigations as to the manner in which it is transmitted. Unlike most infections this disease is apparently not intimately associated with unhygienic surroundings and filth. It occurs extensively in healthy country places and spreads, especially after fairs and rural gatherings of like nature, quite as frequently among cleanly people as otherwise. The disease is clearly not highly infectious notwithstanding its definite epidemic character, and ward, hospital or even house epidemics are not usual.

The first important light shed in this direction was due to the studies of Osgood and Lucas, who found an active virus in the nasopharyngeal membrane of a monkey which had recently recovered from the disease

(published Feb. 18, 1911). Flexner and Clark seven days later reported that they were able to immunize monkeys against the disease by the introduction of a drug into the cerebrospinal fluid. Researches along this line now bid fair to result in the final discovery of a method which will eventually place early cases of the disease under reasonable medical control.

Further researches have tended to substantiate the conclusion that the disease is chiefly if not exclusively inoculated in nature through the nasopharyngeal mucous membrane. Hill, Neustaetter, and Thro have produced evidence that the disease may be transmitted through dust collected in rooms tenanted by patients ill with the acute types of the disease.

Flexner and Clark in October, 1912, have further shown that the infection passes from the nasal mucous membrane to the olfactory lobes of the brain, whence it doubtless extends to the spinal cord, for which the virus appears to possess a strong affinity, although the brain itself is also occasionally diseased.

Extensive clinical studies of the disease in its acute and epidemic phases have been made, notably by the Massachusetts State Board of Health, by members of the clinical staff of the Rockefeller Institute, and by many other institutions and private investigators. The management and cure of the resulting paralysis and atrophies also have been greatly advanced, notably by the methods introduced at the Hospital for Deformities and Joint Diseases in New York City.

Finally, as the most recent contribution to this important study, Rosenau has shown that the ordinary stable fly (*Stomox calcitrans*) is capable of acting as an intermediary or transmitting agent, and he has been able to transfer the disease from monkey to monkey by the agency of this fly. Rosenau's communication was published Oct. 12, 1912, and on Oct. 25, 1912, Anderson and Frost corroborated his results by allowing stable flies which had first been permitted to bite monkeys infected by experimental intracerebral inoculation to bite normal animals, all of whom

subsequently developed typical poliomyelitis anterior. The identity of the infection and its method of transmission was finally demonstrated beyond question by inducing the disease in a third set of animals by the intracerebral inoculation of virus taken from an animal infected by the fly bites.

Although the ultimate cause of the disease is as yet unknown we may summarize our present knowledge of the subject as follows:

Epidemic poliomyelitis is a human-borne, contagious affection, the portal of entry for the virus of which is the upper respiratory tract, in particular the nasopharyngeal mucous membrane.

The infection can be carried and implanted both by active and passive carriers; being resistant and having access to external nature with mucous secretions, it can become attached to dead objects, bedding, clothing, etc., and to domestic pets and domestic insects (fly); and it can be ground into dust and conceivably be disseminated by the wind. (Adapted from Peabody, Draper, and Doches.)

The disease may be directly transmitted in monkeys, and probably also in man, through the bites of at least one variety of fly.

Artificial immunity in animals can be produced. Methods of treatment in man bid fair to meet with eventual success.

Experimental Typhoid Fever.—Although it is universally admitted that the bacillus of Eberth is the sole and specific cause of typhoid fever, absolute experimental evidence has been wanting, since in the experimentally infected animals a septicemia only has been reproduced which clinically and anatomically in no way resembled human typhoid, although the serum reactions justified the conclusion that it was a truly similar state.

Metchnikoff and Besredka have recently conducted most conclusive experiments which appear definitely to settle this point. For their purposes they have utilized as experimental animals that species most closely resembling man genetically and zoologically, the anthropoid apes. Instead of introducing their experiments in a preconceived way, that is, by inoculations with pure cultures of the typhoid bacillus, they first utilized the

stools of typhoid patients, as supposedly naturally occurs in this disease in human instances. With this as an infecting medium they were able to produce in chimpanzees a clinical and pathological picture practically identical with human typhoid fever, especially resembling the forms of the disease seen in children. The experiments were then reproduced, using pure cultures of first the human and then the simian typhoid, with uniformly successful and identical results in clinical signs, and symptoms, pathological changes, and serum reactions. Actual ulceration of Peyer's patches was not obtained, however, although marked inflammation of these bodies was.

Attempts to induce the disease in lower simians by transference of the infection through the apes met with uniform failure; Metchnikoff and Besredka conclude that experimental typhoid fever can be produced only in the higher apes and only by means of intestinal infection. A most interesting observation incident to this research is that in the younger animals the disease picture most closely resembled that seen in children, while the form produced in older animals more closely resembled that familiar to every physician in adult typhoid fever.

A further important observation, bearing on the probable ultimate value of vaccination in the prevention of typhoid fever in man, is that these investigators found vaccination entirely unable to protect the higher apes from typhoid thus induced, although it does protect the lower experimental laboratory animals from typhoid bacillus septicemia produced by intraperitoneal inoculations.

These experiments show most vividly the desirability of using for experimental purposes with human disease problems animals which as closely as possible approach man zoologically. This fact seems to have been first fully appreciated by the French investigators, particularly in their researches in syphilis. Unfortunately the great expense attendant on such experiments and the difficulty which exists in the procuring of these animals obviate their use except under exceptional conditions.

Secondary Infections in Pulmonary Tuberculosis.—It has been very generally appreciated by physicians that the evidences of disease in pulmonary tuberculosis are not entirely and purely caused by the action of the tubercle bacillus, and it has been assumed that many of the signs and symptoms, as well as the complications of the disease, are probably due to secondary infecting organisms. This is particularly true especially of the fever, the exhaustion, the metastatic distribution, amyloid degenerations, and many other manifestations of the disease.

This assumption has in the past been variously disputed, the general consensus of opinion being in favor of this idea, but the older methods of bacterial examination of the blood in cases of pulmonary tuberculosis were so faulty that definitely conclusive facts could not be arrived at. Petit, however, utilizing the most recent and careful methods for the bacterial examination of the blood, shows that 16 per cent. of the incipient cases of pulmonary tuberculosis, 45 per cent. of advanced, and 65 per cent. of the far advanced, cases show a mixed infection of the blood. This condition cannot fail to alter very materially the clinical course or picture of the disease, it renders prognosis more uncertain and serious, and makes much less probable of success attempts to cure by specific medication aimed at the tubercle bacillus solely. Some of the secondary infecting organisms, notably the pneumococcus and the streptococcus, cause in themselves and by themselves alone a much more rapidly fatal disease than any purely tubercular infection.

The importance of secondary terminal infections in tuberculosis has been fully appreciated, but the discovery that a general septicemia exists in the average case is, to say the least, disquieting.

The Etiology and Transmission of Measles.—Much speculation has long existed as to the causative agent of measles and the methods by which the disease is transmitted. Although one of the most familiar of the infectious diseases, up to very recently little has been disclosed in regard to these two essential questions.

Anderson and Goldberger, of the U. S. Public Health Service, have recently taken up this problem and in a series of three papers have brought forward much material that is new and most clarifying in regard to this familiar disease. First, they have been able to reproduce the disease in the *Rhesus* monkey by the injection of blood taken from cases of human measles. Failure on the part of previous experimenters to infect either this animal or those others usually employed in animal experimentation is accounted for by these authors by the fact that they find that the blood in measles apparently contains the infecting virus for only a short period, beginning, according to their experiments, only several hours before and remaining about 24 hours after the appearance of the typical rash. After this short period the infectiousness of the blood, at least for the *Rhesus* monkey, progressively and rapidly declines.

These investigators also show that in many cases the infective virus is capable of passing through the pores of the Bergfeldt filter and is thus ultramicroscopic in nature. The virus resists drying for 24 hours but the infectivity of defibrinated blood is destroyed by heating to 55 deg. C. for 15 minutes, but defibrinated blood frozen for 24 hours is still infectious at the end of that period. They have been able to transmit the disease from monkey to monkey, by simply exposing well animals in the same cage with those sick from the disease, and in this way they find that the period of incubation is not less than five nor more than 11 days, thus corresponding quite closely with the probable periods of incubation in man.

In the course of the same researches they have established the extremely important fact that the nasal and buccal secretions of infected humans are infective when injected into monkeys within 48 hours after the appearance of the eruption. There is, however, a rapid deterioration in the virility of the virus in these media after this period. This indicates apparently that a case becomes free from the danger of communication of the disease relatively early in convalescence. Hence, it would appear

from these studies that the period of quarantine in measles might be safely reduced to two weeks or even less. Another very important point demonstrated by these students is that the scales of the skin are not infectious, in so far as experimentation on the *Rhesus* monkey is concerned. Taken together the experiments of Anderson and Goldberger have done more to clear up the question of measles than all that has previously been done for centuries.

Lucas and Prizer (*Journal of Medical Research*, April, 1912) have corroborated fully this work with measles and have made, among other valuable contributions, the extremely important one of closely reproducing in their experimental animals the clinical picture of the disease as it occurs in man, even to the production of the rash and of Koplik's spots.

Although to a certain extent these researches are disappointing, in that the ultimate etiological organism has not been identified, from a practical or clinical standpoint this is now of subordinate importance since the main facts in regard to the transmission have been finally cleared up.

A Specific Method for the Treatment of Cancer.—One of the notable discoveries of the year has been in the nature of a corroboration of the work of Ehrlich in his synthetic building of salvarsan. Wassermann, now associated in his researches with Ehrlich, has been able to construct a chemical dye stuff which, when injected into the circulation of mice suffering from cancer, selects out and destroys the cancerous tissue without either killing the animal or causing local death of other tissues. Although it is a very far cry from the demonstration that this is possible in mice, among which, as has been shown by Levin and others, a strong natural tendency exists toward the automatic cure of cancer, and the treatment of this tumor in man, this demonstration indicates another avenue for research along which hopeful results may be reasonably expected in the future.

Aside from this demonstration, which can be considered only as chiefly confirmatory of the theory propounded by Ehrlich, little of a

startling nature concerning cancer has been produced within the past year. Nevertheless, the enormous number of careful records, and the numerous experiments which are now being conducted in every laboratory and clinic have caused a diffusion of a knowledge of cancer among the profession, which is producing good results in every branch of medical work. That cancer occasionally cures itself in man, as has long been recognized to be the case in experimental animals, is now universally admitted. As a natural deduction from this fact many attempts are being made to cure the disease by artificially simulating nature's supposed method. Injections of tissue or serum from suitable resistant cases are introduced into those suffering from active forms of the disease. These experiments, which began originally some years ago, may now be judged and weighed in an unbiased scientific way. That such methods have relieved suffering, prolonged life in many instances, and perhaps resulted in actual cure in a few cases is now a matter beyond dispute. Much more may justly be expected from a continuation of these studies and experiments, with the great advantages now offered the profession by such institutions as the Crocker Institute, the newly founded Singer Institute of Paris, and the recently established Wolf fund for cancer research in Montefiore Home. The cancer problem is understood as never before, cures are being effected, and it is reasonable to expect that rapid strides will be made in the future. Nevertheless it is still important for the layman to appreciate that early and correct surgical treatment still insures the greatest safety to sufferers from this scourge and that under this treatment complete cure is not only possible but very frequent.

Syphilis.—Somewhat similar but vastly more successful conditions obtain in regard to syphilis. A well known syphilographer has recently stated that everything written in regard to syphilis over seven years ago is now valueless. This is a result of the discovery of the specific cause of the infection, the inoculation experiments of the French school on apes,

the demonstration of the Wassermann reaction and its derivations, the growth of the specific organism on artificial media, and the modern methods of treatment.

There are probably few topics in medicine on which the general physician is now better informed than on this subject of syphilis. As a natural result of this study and research, reports of which have crowded the medical press for the past few years, diagnosis of the disease has become a matter of relative ease, even in such cases as before could be only suspected. This has resulted in the early application of appropriate treatment before serious change has developed in new cases and in the relief or cure of many conditions occurring late in the disease or as its result, previously almost hopeless.

A further index of this great activity of study has been the raising of the disease from the status of a purely venereal infection, to be mentioned only in the clinic or laboratory and behind closed doors, to a great and important general endemic disease, very frequently contracted in perfectly innocent ways, and a serious public menace which must be openly recognized, diagnosed, and cured. It is no longer necessarily a term of obloquy, except as it is a reproach on the public which, in its ignorance, has so long combated proper hygienic control of an infection second in importance perhaps not even to tuberculosis.

The study of the past year has particularly clarified our understanding of the treatment of this infection. It is now definitely recognized that many of the older methods of management are not superseded by the new, but that all act as adjuvants one to the other. While the brilliant results possible in some, but not all, cases with salvarsan are striking, they are but little more so than those reached for years by the discreet and intelligent use of older drugs, empirical in application perhaps, but as truly specific as the more recent products of the synthetic laboratory. Neo-salvarsan, a modification of the original drug, is being thoroughly tested and bids fair to be as efficient in treatment as the older form, while

much easier to administer and perhaps less dangerous. The problem of syphilis is now well understood by the medical profession, the public is beginning to appreciate and to understand it, and the end of its almost universal prevalence is in sight.

Progress in Radiography.—Although the Roentgen ray is now an old story in medical progress, in no one year has a more wide and useful application of its principles been made than in 1912. In this respect the American medical profession has contributed more than its share. From being at first of only apparent utility in the study of the diseases of the bones, it is now utilized universally and almost as a matter of hospital routine in the study of the disorders of the heart, lungs, and urinary tract, and, most recently, of the movements and conditions of the gastro-intestinal tract. As a result of data secured in this way our ideas of the physiology of the digestive channel, and even of its living anatomy as regards position, have been radically changed. Disease conditions resulting in or caused by delayed or abnormal movements of the food through the stomach and intestine have been discovered, and in several instances satisfactory methods of cure have already been devised for conditions which a few months ago were unrecognized or generally unacknowledged (see also *Physiology and Pharmacology, supra*). While great progress has been made in regard to the diagnosis of various diseases by means of the X-ray, it must be observed that an almost corresponding diminution in the use of this force as a curative agent has taken place. The same disinclination to use radium is also clearly apparent. Sober scientific analysis has failed, except in rare instances, to establish a great therapeutic use for radioactive substances in the cure of disease, while their dangerous effects have been perhaps overestimated.

The Duodenal Tube.—During 1912 a much wider scope and a new impetus have been given to the study and treatment of disorders of the upper digestive tract through the elaboration of the duodenal tube. By means of this ingenious instrument

it is now possible to ascertain definitely the physiological as well as pathological processes taking place in the upper portion of the intestine, and especially as to the important and complex action of the pancreas. Disease conditions formerly difficult or impossible of diagnosis are now readily rendered definite, and proper methods of treatment are being elaborated. Among the other benefits derived from this simple device is the possibility of satisfactorily nourishing patients for indefinite periods in those disease conditions in which the stomach may not be used for this purpose.

Brill's Disease and Typhus Fever.—Several years ago Brill described an infectious disease, apparently not contagious, which occurs with considerable frequency in New York City, particularly, though not exclusively, among the Hebrew population. Cases to the number of 255 were observed by Brill, who tabulated them and analyzed the signs and symptoms in a most careful and scientific manner. Beginning with a prodromal period of a few days, the disease is introduced by an ascending fever which reaches its highest point at about the third or fourth day, when it remains at about 103 or 104 deg. After from 14 to 16 days, a rapid fall in temperature takes place and convalescence rapidly follows. A very severe headache is commonly present at the onset, and at about the fifth or sixth day a characteristic skin rash appears, which persists until the temperature falls. There is very marked prostration and the patient has the appearance of being very gravely ill; the mortality rate, however, is very small, less than one per cent.

Brill stated at the first that the disease was definitely distinguished from typhoid fever, with which it is most likely to be confused in this country, and from all other well defined contagious diseases, stating, however, that as a whole it most resembled typhus fever, but differed from this serious disease in the very important respects that it did not appear to be contagious and that deaths from it were very few. Nothing characteristic, except of a nega-

tive character, was discovered by Brill and his associates from a careful bacteriological and anatomical study of the single case which came to autopsy, nor were they able to transmit the disease to monkeys, even to such species are were known to be susceptible to typhus infection.

Anderson and Goldberger, of the U. S. Public Health Service, securing material from Brill and from other clinicians, were finally able to demonstrate that the blood, when inoculated into susceptible monkeys, caused these animals to become mildly ill with a febrile disease; after their recovery they were found immune to inoculation with material from animals which had been experimentally infected with Mexican or with true typhus fever. Although the symptoms induced in experimental animals in only a very distant and indifferent way resemble those of human typhus fever, there can no longer remain much doubt that Anderson and Goldberger have shown Brill's disease to be identical with, or grouped with, true typhus fever.

Subsequent studies by various physicians familiar with the type of typhus fever prevalent in Manchuria have apparently shown that Brill's disease is quite similar to Manchurian typhus. The result of these various studies has been that the current conception as to the universal gravity of typhus infection must be replaced by the acknowledgment that occasionally it is but very mildly, if at all, contagious, and that it may appear in a form differing widely from that classically described in text-books. The New York City Board of Health now requires that Brill's disease be reported as typhus fever, although its identification as such depends solely on serological reactions. Brill's clinical description and the experimental laboratory work of Anderson and Goldberger are certainly to be classed as among the most complete and noteworthy contributions to practical medical science of recent date.

Transmission of Disease Through Insect Hosts.—Researches of the past few years have emphasized the important rôle which insects play in the dissemination of infectious dis-

eases. Among the first discoveries in this field was the demonstration that malaria is chiefly if not solely passed from individual to individual through the agency of a specific variety of mosquito belonging to the genus *Anopheles*. This important discovery was made by Ross, though long suspected by many students of the disease. A little later it was shown that the common house fly is an important agent in the dissemination of typhoid fever, Asiatic cholera, epidemic dysentery, bubonic plague and other infectious diseases, particularly such as are chiefly inoculated through the gastro-intestinal tract. The serious import of this fact and especially its application in military hygiene, together with the proper methods for its control, were pointed out by Victor Vaughn in his report to the Surgeon-General. The memorable work of Walter Reed and his associates during and subsequent to the Spanish-American War showed the absolute dependence of yellow fever on inoculation by another member of the mosquito family, the *Stegomyia fasciata*. As a result of this investigation yellow fever is now readily subjugated and eradicated. Sleeping sickness is disseminated through the bite of the tsetse fly. It has recently been shown definitely that typhus fever is chiefly spread through the bite of the body louse, possible also by a flea. Texas fever in cattle is spread by the bite of a tick and Rocky Mountain spotted fever also by a tick. Bubonic plague is spread through the bite of insects harbored by various rodents, of which the rat is most frequent. Finally Rosenau and Anderson and Fuet have just shown that poliomyelitis may be transmitted through the bites of the ordinary stable fly (see "Infantile Paralysis," *supra*). Numerous researches are now being conducted along these lines and there is no doubt that other disease conditions will also soon be included in this list. The great importance of these discoveries is well illustrated in the practical subjugation of yellow fever since its mode of transmission has been demonstrated. It is primarily essential that this factor be ascertained before any very considera-

ble progress can be made in the attempt to conquer epidemic diseases. A thorough understanding of the method of transmission renders efficient quarantine relatively simple and much less of a burden on commerce and the general public.

Infection Carriers.—It has been known for some time that typhoid fever and epidemic dysentery are frequently spread through the agency of individuals infected with the organisms of these diseases, but not themselves sick, or not sufficiently so to cause them to be incapacitated for work or ordinary social life. Such persons are known as "carriers," and their detection and management has become not only a medical but also a legal question of considerable difficulty. Bubonic plague is also spread by such means and during the past year the New York Quarantine Station has verified the fact that Asiatic cholera is doubtless often spread through this agency.

The Influence of Alcoholism on Heredity.—The close connection which exists between many great social problems and medical research is well illustrated in the subject of alcoholism. It has long been suspected that alcoholism is and always has been a very important factor in the causation of hereditary defects and predispositions. Numerous sociological and medical studies have indicated a definite connection between alcoholism and many instances of mental and physical defects of offspring. The exact scientific relation which alcoholism bears, however, and the manner in which the taint is transmitted, as well as the probable nature of the inherited defect, have been largely a matter of surmise or of imperfect demonstration. There has been such a conflict of opinion on this subject and personal impressions have so tainted these reports that absolute, impartial, scientific demonstration was imperatively necessary as a basis for future study of this very important subject. This has now been furnished by Stockard, working in the anatomical laboratory of Cornell University.

This investigator, working with primarily healthy and fecund animals, has been able, by inducing artificial

alcoholism either on the male or female side or on both, to produce at will defective offspring. The defects he shows are chiefly of the central nervous system, a finding quite in accord with the previous consensus of opinion of most students of this subject and also indicated, if not actually proven, by previous experimental studies. Stockard, however, has not only demonstrated absolutely

this point, but has brought out the highly important and new fact that temporary and acute alcoholism existing at the moment of fecundation either in the male or female produces definite and almost certain defects in the offspring. Stockard's work is of elemental importance; it both confirms and demonstrates important facts which have been previously but opinions.

MEDICAL EDUCATION

ABRAHAM FLEXNER

Institutions and Students.—Agencies interested in the improvement of medical education in the United States have in recent years co-operated in the attainment of several definite ends, to wit: the elimination of the commercial or proprietary medical school, the elevation of the requirements for entrance upon medical education, improved equipment for the teaching of the laboratory subjects, the establishment of more intimate and responsible relations between hospitals and properly conducted medical schools, and the abolition of sectarian privileges. The introduction of these reforms inevitably results in the decrease of medical schools and in a decrease in attendance upon those that survive. In the year 1904 there were in the United States alone 166 schools of medicine, of which 133 were so-called regular schools, 19 homeopathic, 10 eclectic, three physio-medical, and one nondescript; osteopathic schools are not reckoned in these totals. At present this total has decreased to 116, of which 100 are regular, 10 homeopathic, 6 eclectic. Medical college attendance reached its highest point in 1904, when 28,142 persons were engaged in the study of medicine in the United States. In the year 1911-12 the number decreased to 18,412. The number of graduates, which in 1904 reached a total of 5,747, had fallen in 1912 to 4,483.

Entrance Requirements.—Thirty medical schools now require for entrance two or more years of work in a college of liberal arts, in addition to a four-years' high-school education. Fifteen more require, in

addition to a four-years' high-school course, one year of college work in physics, chemistry and biology. The supply of more highly trained medical graduates has increased so rapidly that ten of the state examining boards have already adopted preliminary requirements in advance of a four-years' high-school education. It must be conceded, however, that the situation has hardly improved as much as the foregoing statements would lead one to suppose; for to some extent the actual elevation in entrance requirements is less than the normal or apparent advance. Nevertheless, it may be asserted that applicants for admission to medical schools are nowadays submitted to increasingly severe scrutiny, and that in many institutions the advanced requirements are strictly administered.

Facilities.—In point of laboratory equipment progress has in recent years been so marked that the better medical schools of the United States are now fairly well equipped for the teaching of the underlying medical sciences. The main effort of recent years has necessarily been in the direction of procuring better facilities for clinical teaching. In some cases this has been accomplished by contractual arrangements between local universities and privately endowed or even municipally conducted hospitals. The object of these arrangements is to place in the hands of university trustees the selection of the medical staff of the hospital in question, subject, perhaps, to the approval of the hospital board, which would, under ordinary circumstances, follow as a matter of course. The hospital staff

thus selected is at one and the same time the teaching faculty of the university and the medical and surgical staff of the hospital. A staff so selected enjoys a continuous service, is meant to be equally devoted to education and science, and thus to serve both the university and the hospital better than a staff selected on personal grounds and enjoying only brief terms of service, as has usually been the case. Arrangements of this type have recently been entered into by Harvard, Columbia, Cornell, and Washington Universities, with endowed hospitals in their respective cities, and by the University of Toronto with the municipal hospital. The difficulties attending such co-operation, however, are occasionally so great that university hospitals owned and operated by the universities have been projected. Such has recently been the case in Indiana and Minnesota.

Medical Sects.—Coincidentally with the exercise of greater care in admitting men to the practice of regular medicine, sects have everywhere sprung up demanding for their adherents easier terms. The popularity of the medical sect is in no small measure to be thus accounted for. Medical educators, however, have insisted in late years that every candidate for the right to practice, regardless of his therapeutic creed, should be required to reach the same standard in respect to preliminary education and to submit to the same examinations in respect to such sub-

jects as anatomy, physiology and pathology. Wherever this principle has been established medical sects have diminished in size and importance. The highest number of homeopathic students was reached in 1900, when there were 413. In the year under review there were 185. The eclectic sect, numbering 221 students in 1890, had only 92 in 1912. The physio-medical sect, which was never numerically important, has now entirely disappeared.

Endowments.—Increased endowments have been not uncommon in recent years. The most notable of these in the year just passed is that of Western Reserve University, Cleveland, which has just completed a million dollar fund for the endowment of its medical school. Smaller sums have been added to the resources of other institutions throughout the country.

Bibliography.—The most reliable source of information regarding the details of current progress in medical education is the report annually issued by the Council on Medical Education of the American Medical Association (535 Dearborn Avenue, Chicago). The subject is discussed also in the annual reports of Henry S. Pritchett, President of the Carnegie Foundation for the Advancement of Teaching. See also Abraham Flexner, *Medical Education in the United States and Canada* (Carnegie Foundation, Bulletin IV, 1910), and *Medical Education in Europe* (Carnegie Foundation, Bulletin VI, 1912).

PUBLIC HEALTH AND HYGIENE

W. T. SEDGWICK

General Sanitary Condition of the United States.—No unusual plague or pestilence has prevailed throughout the United States, or any large section of it, since the epidemic of Asiatic cholera which affected some of the Gulf states in 1905, excepting bubonic plague, which invaded the United States for the first time at San Francisco in 1907 and soon after appeared also on the upper Pacific slope. Both of these epidemics were quickly controlled, chiefly through the good work of the U. S. Public Health

and Marine Hospital Service, to which appeal for aid was taken with the happiest results by the state authorities concerned. Asiatic cholera has not appeared in the United States during the year 1912, but bubonic plague probably still lingers among certain wild animals (rats and squirrels) on the Pacific slope and may at any time make its appearance in other sections of the country. Its recent appearance in Porto Rico (see VIII, *Porto Rico*) caused much anxiety on the Atlantic

Slope, which, however, it has fortunately not invaded.

Other epidemic diseases, such as tuberculosis, typhoid fever, diphtheria, hookworm and pellagra, are unfortunately now thoroughly domesticated, and can be controlled, if at all, only by increased vigilance, while their extermination would appear to be a long way off. Of these, however, no unusual outbreaks have recently occurred, while the number of deaths attributable to each is probably on the whole diminishing year by year. In short, the sanitary condition of the entire United States may be said to be improving, with a gradually diminishing death rate and more attention than ever before paid to water supply, sewerage, housing, factory sanitation and nearly every branch of hygiene and sanitation.

A Federal Public Health Service.—Under the Constitution matters relating to public health are assigned chiefly to the several states. A National Board of Health existed for a time (1879-83), and did excellent work, especially in the direction of investigation, but it had but a short and unsatisfactory life. Since that time whatever work for public health has been undertaken by the federal government has been done by some one of the different Departments, as, for example, the Department of Agriculture, the Treasury Department, etc. In the Treasury Department there has long existed a Bureau, known as the Marine Hospital Service. In 1902 the name of this Bureau was changed to the Public Health and Marine Hospital Service, a well appointed hygienic laboratory was provided, and investigations bearing directly upon the general public health were begun. Under an Act approved August 14, 1912, the name of this Bureau was further changed by the omission of the words "Marine Hospital," so that it now stands as the "Public Health Service." At the same time the powers of the Service were materially enlarged, so that we now have a federal public health service both in name and in fact. The Act referred to is so fundamental and so brief that it deserves to be quoted nearly in full. It is provided:

That the Public Health and Marine-Hospital Service of the United States shall hereafter be known and designated as the Public Health Service, and all laws pertaining to the Public Health and Marine-Hospital Service of the United States shall hereafter apply to the Public Health Service, and all regulations now in force, made in accordance with law for the Public Health and Marine-Hospital Service of the United States, shall apply to and remain in force as regulations of and for the Public Health Service until changed or rescinded. The Public Health Service may study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution either directly or indirectly of the navigable streams and lakes of the United States, and it may from time to time issue information in the form of publications for the use of the public.

That beginning with the first day of October next after the passage of this act the salaries of the commissioned medical officers of the Public Health Service shall be at the following rates per annum: Surgeon-General, \$8,000; Assistant Surgeon-General, \$4,000; senior surgeon, of which there shall be ten in number, on active duty, \$3,500; surgeon, \$3,000; passed assistant surgeon, \$2,400; assistant surgeon, \$2,000; and the said officers, excepting the Surgeon-General, shall receive an additional compensation of 10 per centum of the annual salary as above set forth for each five years' service, but not to exceed in all 40 per centum; *Provided*, That the total salary, including the longevity increase, shall not exceed the following rates: Assistant Surgeon-General, \$5,000; senior surgeon, \$4,500; surgeon, \$4,000; *Provided further*, That there may be employed in the Public Health Service such help as may be provided for from time to time by Congress.

This Act is full of promise for the future, since, taken together with the powers already pertaining to the Service, it enables the broadest investigations to be made by well-paid officers, and provides for the publication of sanitary information.

State Boards of Health.—These have long been of unequal excellence in respect not only to organization and powers, but also to efficiency, and of late some have displayed notable energy, activity and usefulness. That of Virginia, for example, re-

organized only a few years ago, has immediately taken a prominent position in respect to its general activities, and especially because of its popular publications, many of which have been found serviceable in other states. Much the same may be said of the Kansas state board, while that of New York is noteworthy especially for the excellence of the organization of its working staff. The activity of the Florida board also deserves mention, while the state boards of California and Louisiana have displayed originality as well as energy in popular sanitary education by means of railway cars specially fitted up for the purpose, and sent all over the state as demonstrations accompanied by popular lecturers. The board of the state of Washington has done new work in the direction of camp sanitation, particularly in connection with railroad building and similar industrial enterprises, while that of Minnesota has done particularly good work in epidemiology. The state of Pennsylvania is also to be commended for supplying to its single commissioner, who, like the commissioner of health of the state of New York, acts in place of a board of several members, appropriations for the aggressive work which he has done, particularly in the direction of the prevention of the pollution of streams and in the control of tuberculosis. Perhaps no other board in the country has so rapidly changed from a condition of comparative inactivity with pitifully small annual appropriations to one of state-wide energy, with relatively large appropriations.

Inasmuch, however, as most of the police powers required for the protection of the public health reside under the constitution in state and local boards, much more might be done in most states than is done at present if only these boards could secure a proper personnel and sufficient appropriations. One interesting feature now rapidly coming to the front is the establishment in most of the more efficiently organized state boards of departments of sanitary engineering, whose business it is to deal especially with questions of water supply and sewerage, and there can be no doubt that in the near future every

state board of health properly organized must possess a department of this kind. Much the same thing might be said of departments of vital statistics and epidemiology, and especially of a hygienic laboratory, such as is now provided by nearly all the more progressive boards. There is to-day a popular demand for greater energy and activity on the part of state and local boards, for which the public is apparently ready if not eager to meet any reasonable expense.

Local Boards of Health.—In many states the local boards of health are even more powerful under the constitution than are the state boards, deriving authority as they may from the general assembly or state legislature, which, within the borders of the state, is supreme in matters of this kind. As would be expected, however, local boards differ widely in their organization, efficiency, and resources, and, speaking generally, it must be said that they are far less efficient and useful than they might be or ought to be. Their composition is often affected by politics, and not unfrequently tenure of office, both for the members of the board and for their employees, is too uncertain to attract the best material. Nevertheless, some of our local boards are in excellent condition and doing notable work, as, for example, those of New York City, Richmond, Va., Chicago, Ill., and Montclair, N. J. Improvement in this direction is on the whole steady if slow, and it is probably fair to say that few backward steps have been taken during the past year, while in many places conspicuous advances have been made.

The American Public Health Association.—One of the agencies capable of greatest service in the promotion of public health in the United States is the American Public Health Association, which includes in its membership representatives of the health authorities of the United States, Canada, Mexico and Cuba. The annual meeting in Washington at the end of September was largely attended and many interesting and important papers were presented. A new section—Sanitary Engineering—was added, and a sanitary engineer, Ru-

dolf Hering, instead of a physician, was for the first time elected to the presidency. The association now publishes a journal—the *American Journal of Public Health* (289 Fourth Ave., N. Y.), which, under new management and improved conditions, bids fair to be indispensable for all persons interested in the advancement of the theory and practice of public health science.

International Congresses.—Three of these of more than ordinary importance for the advancement of public health and hygiene met during the autumn of 1912. First in order of importance was undoubtedly the International Congress of Hygiene and Demography described below. A second was the International Congress of Applied Chemistry (see this title in Department XXVI), the principal meetings of which were held in New York and Washington, and which had a registration not very different from that of the former. One section of the latter congress, that on hygiene, dealt directly with the problems indicated by its name, and information in regard to its work may be had by addressing Prof. William P. Mason, Polytechnic Institute, Troy, N. Y. The third, known as the American Public Health Association, has already been sufficiently dealt with above. A fourth, the Association of State and Provincial Boards of Health, met at the same time as the American Public Health Association, and information concerning its proceedings may be had by addressing Dr. H. M. Bracken, Capitol Building, Minneapolis, Minn.

The International Congress of Hygiene and Demography.—This great body met, for the first time in the United States, at Washington in September, 1912. Elaborate preparations had been made for it, and a highly creditable exhibit of methods and appliances pertaining to modern hygiene connected with it offered instructive and valuable demonstrations. The membership, drawn from all over the world, was phenomenally large, namely 3,800. Delegates from the various governments and from many of the cities of the world were present, and were received at the White House by the President of the

United States, who made an admirable opening address and extended to the foreign delegates a semi-official welcome. The congress was divided into several sections, and programmes were published in several languages. It was the general opinion of good judges that this was one of the most successful congresses ever held in the United States. Information in regard to it or its proceedings may be had by addressing Dr. John S. Fulton, Secretary-General, Maltby Building, Washington, D. C. (See also XVIII, *Prevention*; and XXXIV, *Education*.)

New Discoveries of the Sources of Disease.—Public-health administration is and must always remain dependent upon a scientific knowledge of the causation of disease, and since the epoch-making discoveries of Koch and his school between 1876 and 1886 hardly a year has gone by without some substantial addition to our knowledge in this direction. The past year promises to be memorable for certain fundamental discoveries in the transmissibility of infant paralysis (anterior poliomyelitis), made by investigators associated with the State Board of Health of Massachusetts and the Medical School of Harvard University. The Massachusetts Board, ever since 1907, had been making careful studies of the disease as it appeared from time to time in that state, and as a result its investigators had begun to suspect that it was transmitted by flies. It remained for Dr. M. J. Rosenau, professor of hygiene and preventive medicine in the Harvard Medical School, to make experiments for the Massachusetts State Board, which proved that monkeys could be infected with the disease, and that certain flies, known as "stable" flies (*Stomoxys calcitrans*), after having bitten infected monkeys, are able to transmit the disease to monkeys previously uninfected. Dr. J. F. Anderson, director of the Hygienic Laboratory of the U. S. Public Health Service, and one of his collaborators, Surgeon Frost of the same Service, have since confirmed the results of Rosenau. The practical importance of these discoveries is obvious. (See also *Pathology and Medicine, supra*.)

During the year further proof has been brought forward of the identity of the so-called Brill's disease, discovered by Dr. Brill in the city of New York, with the old-fashioned typhus, "ship" or "jail" fever, which was supposed to have been long since exterminated in most highly civilized communities (see "Collected Studies on Typhus," U. S. Public Health Service, Hygienic Laboratory, Bull. 86, Oct., 1912). Interesting and important work has been done also by Dr. Anderson on the infectivity of measles. (See also *Pathology and Medicine, supra.*)

Another brilliant discovery has been that of the art of cultivating malarial germs or parasites outside the human body, a feat never hitherto accomplished. The micro-organism of malaria was discovered by Laveran, a French surgeon at Algiers, in 1880, and in 1897 the principal transmitter of malaria was discovered to be the female of the genus *Anopheles*, a not uncommon mosquito, but up to 1912 no one had succeeded in cultivating the microbes of malaria outside the human body. At the International Congress of Hygiene and Demography Dr. C. C. Bass of New Orleans surprised and delighted students of bacteriology and parasitology by demonstrating the practicability of artificial cultivation of the malarial parasite in blood. In November, Dr. F. B. Mallory, pathologist to the Boston City Hospital, announced the discovery of important additions to our knowledge concerning the local habitat and *modus operandi* of the microbes of whooping cough.

Vital Statistics.—One of the shortcomings of American sanitation is the want of reliable standards and measures of population, mortality, morbidity, and the like, such as can be furnished only by proper vital statistics. The federal Bureau of the Census is doing excellent work in this direction, but is greatly handicapped by the neglect of many states, cities and towns to furnish reliable data. There still remains a large section of the country not included by the Census Bureau within the registration area, that is to say, not considered as yielding reliable statistical material. The registration area

is, however, steadily growing larger and it is greatly to be hoped that it may, in the near future, cover the whole country. (See *Vital Statistics, infra.*)

Water Supply and Public Health.—Great progress has been made within the year in the installation of improved water supplies in many parts of the country, and fresh object lessons of the disasters which await communities afflicted with polluted water supplies have been numerous. It is now so universally admitted that uninfected water is essential to the public health and the public welfare that communities to-day all over the world are vying with one another in their haste to secure such supplies.

The technique of water purification has shown of late no very great advances except in one direction, namely, the employment of sterilization by means of some cheap and efficient disinfectant, especially "bleaching powder" or calcium hypochlorite. This reagent, introduced with reserve, only three or four years ago, has become to-day an indispensable adjunct of sanitary laboratories, some of which keep ready for transmission to points of danger emergency apparatus for its rapid application to public water supplies. In fact, this method is more widely used than is often admitted, and many communities are now provided either regularly or from time to time with drinking water which has been treated by calcium hypochlorite, and as far as is known no evil effects have anywhere been detected. On the contrary there is reason to believe that hundreds of lives have been saved from death by typhoid and other fevers through the use of this effective sterilizing agent. Tastes and odors in public water supplies caused by microscopic plants or animals other and larger than bacteria, are nowadays widely controlled by the use of copper sulphate, and here again many public water supplies have been treated without the knowledge of the consumers, and with no known evil effects whatever. (See also XXVI, *Sanitary Chemistry.*)

Sewage and Sewerage.—No new principles concerning sewage, sewer-

age or the purification of sewage, have recently come to light, but all along the line there has been marked activity in more careful application of principles already known. One of the most interesting and notable examples of the introduction of improved sewerage and the latest and most approved methods of sewage disposal, is to be found in the city of Baltimore, a city formerly practically without sewers, but now undergoing sewerage with the introduction of a thoroughly modern sewage-disposal plant destined to effect a high degree of purification. A comprehensive treatise on sewage disposal has recently appeared by George W. Fuller, C. E., one of the foremost experts on this subject in the United States, and reference may be made to this volume for the latest ideas in this important field.

Sewage disposal continues to give rise to frequent litigation, for the reason that, while communities are anxious to get rid of their sewage, other communities are unwilling to have them dispose of it within their borders. Important reports have been issued by the authorities of the Chicago Sanitary District, touching the continued operation of the Chicago Drainage Canal, and other subjects, and the taking of testimony in what promises to be a famous case, namely that of the State of New York *vs.* the State of New Jersey, and the Passaic Valley Sewerage Commissioners for an injunction to prevent the latter from emptying the sewage of the Passaic Valley into the Upper Bay of New York Harbor at a point not very distant from Robbins Reef, has proceeded throughout the year. It is contended by the state of New Jersey that such disposal can be effected without producing a nuisance or otherwise doing serious harm to the waters of New York Bay, a contention denied by the state of New York. (See also XI, *Public Services.*)

Milk Supply and Public Health.—There has been a notable change of public opinion within the last few years concerning the necessity and wisdom of supplying to communities pasteurized milk. A few years ago many members of the medical profes-

sion, and particularly many of those having to do with children and children's diseases, strongly opposed pasteurization, on the ground that heated milk was essentially abnormal milk, and that some children receiving it contracted scurvy as a result of its use. Other persons, including medical men and sanitarians, objected to it because through its destruction of the bacteria pasteurization made difficult determination of the age or cleanliness of milk. On the other hand, those in favor of pasteurization, kept pointing to the fact that only in some such way is it possible to insure the consumers of milk against epidemics of infectious diseases such as typhoid fever, scarlet fever, and diphtheria. The repeated occurrence of epidemics of infectious disease, even from milk supplies more than ordinarily guarded, together with the affirmation by competent authorities of the fact that there is very little danger of scurvy from pasteurized milk, and the experience of many physicians that most children thrive better upon such milk than they do upon the necessarily somewhat stale and frequently unclean milk of great cities, seem at last to have convinced all but the most conservative that it is only by some form of cooking, such as parboiling (pasteurization), that the safety of the consumers of milk can ever be secured. In particular, a notable epidemic in Boston and its neighborhood in 1911, in which some 2,000 persons were attacked by a mysterious form of "tonsillitis," afterwards recognized as "septic sore throat," and accompanied by many fatalities or other consequences of the gravest sort, seems to have demonstrated conclusively the unwisdom of the general use of raw market milk, unless in exceptional cases.

The whole subject of the milk supply of cities is in a highly unsatisfactory state throughout the entire country, both from the economic and the sanitary point of view. Excellent work has been done in certain places, as for example, by the Board of Health of Richmond, Va., leading to the improvement of the public milk supply, but in some places, as for example, in eastern Massachu-

setts, dairying is going out of fashion, partly because of the increased cost of fodder of every sort, the increased cost of labor, the rising standard of sanitary requirements imposed, and particularly the unwillingness of the public to pay greatly increased prices for milk. The milk situation, can in fact, hardly be described as anything better than unfortunate, and it is the obvious duty of publicists, and especially of public-health authorities, to investigate it carefully, and to apply remedies if possible at the earliest possible moment, for it will probably always remain true that milk is one of the most important foods of mankind. A comprehensive treatment of the sanitary aspects of the subject up to 1909 may be found in Bulletin 56 of the Hygienic Laboratory, U. S. Public-Health and Marine-Hospital Service, and the very latest information from a volume on *The Milk Question* (Houghton Mifflin & Co.), which at this writing is just issuing from the press. (See also XIX, *Dairying*, and XXVI, *Chemistry of Food and Nutrition*.)

Oyster Supply and the Public Health.—Ever since the striking outbreak of typhoid fever at Wesleyan University, Middletown, Conn., in 1894, which was conclusively traced to infected raw oysters, the oyster question has grown in extent, interest and importance. It is now recognized that polluted oysters may be infected, and if eaten raw or partially cooked, may prove efficient carriers of infection. The Department of Agriculture has recently reported unfavorably concerning a portion of the oyster supply of the city of Washington, D. C., and there is reason to believe that the undue prevalence of typhoid fever in the United States is to some extent attributable to polluted oysters. On the other hand, many oyster beds are free from pollution, and the purveyors of oysters are now fully alive to the dangers threatening the industry. It is greatly to be desired that some method shall be found for ascertaining the true condition of the oysters offered for sale in the United States, and that these shall be labeled, not so much according to their place of origin as according to their sanitary condition. Here also, as in

the case of milk and water of bad or uncertain history, sterilization, or at least thorough pasteurization, is the only absolute safeguard.

Pure Foods and Drugs.—Interest has been maintained during the year in the general question of pure foods and drugs, and much has been said and written on the subject. Fortunately, it still remains true that most family foods, such as sugar, flour, potatoes, eggs, meats, fish, etc., are not subject to serious sophistication. Sometimes, however, adulteration, fraud, and misbranding of foods exist, especially in those states which are destitute of adequate food-inspection laboratories or regulations. In this connection the Department of Agriculture is entitled to credit for its energy and activity in meat inspection, and in the investigation of foods and drugs. It is probably true that drugs are more often adulterated than foods, although it is an obvious duty of every state to supervise carefully the food materials offered for sale within its borders, and particularly those which originate and remain within the state, for the reason that these are not subject to supervision by the United States authorities under the regulations governing interstate commerce. (See also XXVI, *Chemistry of Food and Nutrition*.)

Public Health and the Increased Cost of Living.—It is now generally admitted that in some directions at least there has been of late years a marked increase in the cost of living, and this increase has, or is likely to have in the future, an important bearing upon the public health. Any rise in the cost of food must eventually mean to many families comparative abstinence from the more costly materials, and while abstinence from excessive indulgence in meats would probably do no harm to those addicted to such indulgence, there is danger that the poor may actually suffer in health, energy, or working capacity. It is, however, difficult to make any accurate estimate, especially in advance, as to the reality or the extent of such conditions, and the cautious student must at present rest satisfied with the general statement of danger.

Cold Storage and the Public Health.

—With the increasing cost of living, the cold-storage industry has been subjected to widespread attack, on the grounds of health and of responsibility for some of the increasing cost of food materials. It has been argued that vast accumulations of food materials are held back by the proprietors of cold-storage warehouses for purposes of gain, to the injury both of the public purse, and the public health. It is, of course, a fact that large quantities of food are held over from seasons of plenty to seasons of scarcity, and disposed of at higher prices than they could have brought when placed in storage. This, however, is held by careful students of the subject to be a natural and unavoidable result of the labor, capital, insurance and risks involved, so that a considerable increase of cost is reasonable and proper. It is also argued that the foods thus held back deteriorate seriously during storage, to the detriment of the public health. On the other hand, it is stated that if the foods were good when placed in storage, they may be taken out after the lapse of even long periods of time, practically unchanged in edibility and nutritive value, although generally less attractive in respect to flavors. Again, it is argued by critics of cold storage that on the whole this tends to increase prices, while it is contended by friends of the industry that the very reverse is true, and that if the cold-storage warehouses did not exist, most of the food which they preserve would be wasted, so that the inducement to the producer would soon be decreased and production itself greatly diminished with an accentuation of the difference between prices in seasons of abundance and seasons of scarcity. Few subjects have been more strenuously disputed during the year than these in their various aspects, such, for example, as the proper time, during which various food materials should be allowed to be stored, proper supervision by boards of health, licensing, labeling, etc. Fortunately the whole subject has been carefully investigated and digested by a representative commission created by the legislature of Massachusetts "to investigate

the subject of the cold storage of food and of food products kept in cold storage." This commission, known as the Cold Storage Commission, held many public hearings and made careful investigation of the whole subject from the standpoint of both public health and prices, and in January, 1912, presented a report of more than 300 pages, which is probably the latest, fairest, and most complete presentation of the subject hitherto available. The conclusions of the commission, were on the whole, reassuring and favorable to the industry. Their recommendations were promptly adopted by the Massachusetts legislature of 1912, large powers of investigation and regulation were given by the legislature to the State Board of Health, and in the September number of the *Bulletin* of the latter will be found rules and regulations prescribed by the board in accordance with the statute, and based upon the recommendations of the commission.

Progress in Hygiene.—If hygiene be distinguished from sanitation, by making hygiene the care and promotion of the personal health, and sanitation the care and improvement of the environment, then as regards hygiene, which thus becomes personal rather than public hygiene, it is interesting to note that progress is being made in this direction also. One of the best results of the anti-tuberculosis movement has been the insistence upon the importance of fresh air, good food, rest, and moderate exercise. In hundreds of communities to-day all over the United States, people who appreciate fresh air may be found in numbers greater than ever before, and who in order to get it, are sleeping out of doors in tents, or upon verandas, or upon specially constructed sleeping porches, one of which may now be added to almost any house at small expense. Investigations of ventilation are also being made as never before in many laboratories by skilled experimenters, in respect to both private dwellings and public buildings, such as halls and schoolhouses. Walking, outdoor gymnasia, outdoor games, and other forms of rational muscular exercise, municipal bath houses, municipal

gymnasia, and motoring; all these and many more customs or fashions are contributing to an improved personal hygiene.

Progress in Anti-typhoid Inoculation.—Great strides have been made in this direction in the army, the navy, and even among civilians, and it now appears that this procedure is of the highest significance to the public health and the public welfare. (See *AMERICAN YEAR BOOK*, 1911, pp. 404-5, 463, 676-680.)

Infant Mortality.—A gratifying decline in infant mortality is apparently going on as a general thing throughout the United States, although how far this decline is associated with, and dependent upon, the diminishing birth rate is not always clear. Some of it no doubt is due to better hygiene on the part of parents, and especially of mothers in the prenatal period. Some of it is probably due to improved milk supplies, and the existence and work of the Association for the Study and Prevention of Infant Mortality is excellent testimony to what is going on. The meetings and proceedings of this association furnish abundant and timely information upon this topic. (See also XVIII, *Prevention, Correction, and Charity*.)

School Hygiene.—This subject falls naturally into the sanitation of schoolhouses and the hygiene of pupils during school life. It is now receiving, especially in our larger cities, widespread and increasing attention, and those interested should consult the annual reports of the School Hygiene Association, as well as the various medical journals. (See also XVIII, *Prevention, Correction, and Charity*, and XXXIV, *Education*.)

Playgrounds and School Gardens.—The playground movement and the school-garden movement are likewise making great headway, and the aphorism, coined by one of the principal instigators of the movement, "the boy without a playground is the father of the man without a job," appears to be taking a strong hold upon the public interest and the public purse. School gardens, likewise, while having other good effects, help to contribute to the filling of

those reservoirs of vital resistance to disease, which are among the most precious possessions and the greatest bulwarks of personal health. (See also XVI, *Recreation*.)

The Common Drinking Cup and the Public Roller Towel.—Notable progress has been made in the abolition of the common drinking cup, a very large number of states now forbidding it within their own borders, and a recent order of the Secretary of the Treasury, dated Oct. 30, 1912, forbids it upon railway trains and steamers in interstate traffic. This movement deserves commendation and support, although care should be taken to substitute for the common drinking cup some other appliance by means of which thirsty people in public places may secure an adequate supply of drinking water. For this purpose cheap individual paper cups are now provided, either at small expense or free of charge, in many parks, schoolhouses, hotels, railway trains, and convenience stations. More recently the public roller towel has been attacked and in some states made a subject of legislation. By an order of the Secretary of the Treasury, dated Dec. 9, 1912, its use is prohibited in interstate traffic.

Ventilation.—Much interest has been excited by the seemingly revolutionary ideas of Dr. Leonard Hill, an English physiologist, who, after pointing out that bad air does not so much consist in oxygen deficiency or carbonic-acid excess as in high temperature, humidity, and stagnation, insists that a small room with a fan to prevent air stagnation is often more effective than a large room with open windows or other ventilation devices. Good popular accounts of Dr. Hill's work have appeared in various public prints, for example, in the *Popular Science Monthly* for October, 1912, although his original papers were published in England. There is no question that in the main Dr. Hill is right in his contention and that we are likely to witness great changes in the near future in our attitude toward the theory and practice of ventilation. A timely and valuable discussion of the whole subject may be found in *Engineering News* for Nov. 28, 1912.

VITAL STATISTICS

Vital Statistics of the United States.—At the close of the year, the Bureau of the Census had not completed the compilation of mortality statistics for the year 1911. The figures for 1910 are the latest available as the YEAR BOOK goes to press. We are able to present, however, through the courtesy of Dr. Cressy L. Wilbur a statement of the extension of the registration area during 1911. Two of the tables contributed by Dr. Wilbur to the YEAR BOOK for 1911, those showing the growth of the reg-

istration area to 1910 and the annual crude death rates therein for the years 1901-1910, are repeated below. For statistics of births and infant mortality in registration states and cities, reference should be made to the AMERICAN YEAR BOOK for 1911 (pp. 415-6).

The Registration Area.—The following table shows the growth of the registration area of the United States and the total deaths and deaths per 1,000 of the population therein up to the close of 1910:

YEAR	Population			Deaths ¹ in Registration Area	
	Continental United States	Registration Area		Number	Rate per 1,000 Population
		Number	Per cent.		
Census year 1879-1880.....	50,155,783	8,538,366	17.0	178,645	19.8
Census year 1889-1890.....	62,622,250	19,659,440	31.4	386,212	19.6
Census year 1899-1900.....	75,994,575	28,807,269	37.9	512,669	17.8
Calendar year 1900.....		30,765,618	40.5	539,939	17.6
Calendar year 1901.....	77,747,402	31,370,952	40.3	518,207	16.5
Calendar year 1902.....	79,365,396	32,029,815	40.4	508,640	15.9
Calendar year 1903.....	80,983,390	32,701,083	40.4	524,415	16.0
Calendar year 1904.....	82,601,384	33,345,183	40.4	551,354	16.5
Calendar year 1905.....	84,219,378	34,052,201	40.4	545,533	16.0
Calendar year 1906.....	85,837,372	41,983,419	48.9	658,105	15.7
Calendar year 1907.....	87,455,366	43,016,990	49.2	687,034	16.0
Calendar year 1908.....	89,073,360	46,789,913	52.5	691,574	14.8
Calendar year 1909.....	90,691,354	50,870,518	56.1	732,538	14.4
Calendar year 1910.....	92,309,348	53,843,896	58.3	805,412	15.0

¹ Exclusive of stillbirths.

The registration area for deaths is composed chiefly of those states in which the registration under state laws is sufficiently complete so that transcripts are obtained by the Bureau of the Census as the basis for the annual compilation of mortality statistics, but certain cities in non-registration states are also included, the registration of deaths in these cities being conducted under local ordinances.

For the year 1911 the states of Kentucky and Missouri were added to the registration area. Virginia and Mississippi passed laws during the year, and Maryland amended its registration law, so that it complies more closely with the model law recommended by the Bureau of the Census. As a result of this amendment the registration of births has already

improved during the first few months of its operation from 40 to 50 per cent., and that of deaths from 10 to 20 per cent.

The model law, which has given excellent results in all states in which it has been adopted and thoroughly enforced, has been revised by a joint committee appointed by the Council on Health and Public Instruction of the American Medical Association, the American Public Health Association, the American Bar Association, the Conference of Commissioners on Uniform State Laws, and the Bureau of the Census, and efforts will be made to secure its adoption in certain states, notably Illinois, Iowa and Tennessee, during the coming sessions of their legislatures.

The Children's Bureau, under the direction of Miss Julia C. Lathrop,

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ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, 1901-1910

UNITED STATES ¹	Annual Average 1901-5	Number of Deaths ⁴ from All Causes per 1,000 population		UNITED STATES ¹	Annual Average 1901-5	Number of Deaths ⁴ from All Causes per 1,000 population	
		1909	1910			1909	1910
Registration area ² ...	16.3	14.4	15.0	Registration cities of 100,000 population or over in 1910:			
Per cent. of total population.....	40.7	56.1	58.3	Fall River, Mass....	20.3	19.1	18.4
California.....	13.4	13.5		Lowell, Mass.....		18.0	19.7
Colorado.....	14.2	13.8		Worcester, Mass....	16.8	15.5	16.9
Connecticut.....	16.0	15.0	15.6	Detroit, Mich.....	15.0	14.0	15.9
Indiana.....	13.0	12.9	13.5	Grand Rapids, Mich.....		11.9	14.6
Maine.....	16.0	15.6	17.1				
Maryland.....		15.5	16.0	Minneapolis, Minn..	10.2	10.7	12.3
Massachusetts.....	16.6	15.4	16.1	St. Paul, Minn.....	10.0	11.4	11.9
Michigan.....	13.2	13.1	14.1	Kansas City, Mo....	15.9	14.4	15.9
Minnesota.....		10.9		St. Louis, Mo.....	17.9	15.8	15.8
Montana.....		10.6		Omaha, Neb.....	11.1	14.7	15.1
New Hampshire.....	16.4	16.9	17.3				
New Jersey.....	18.1	14.7	15.5	Jersey City, N. J....	19.3	16.8	16.3
New York.....	17.1	15.7	16.1	Newark, N. J.....	18.7	16.5	16.5
North Carolina ³ ...		18.7		Paterson, N. J.....	16.9	15.3	14.7
Ohio.....		12.9	13.7	Albany, N. Y.....		17.6	19.4
Pennsylvania.....		14.7	15.6	Buffalo, N. Y.....	15.5	15.2	16.3
Rhode Island.....	17.8	15.6	17.1				
South Dakota.....				New York, N. Y....	19.0	16.0	16.0
Utah.....		10.8		Bronx Borough.....	20.9	15.9	15.9
Vermont.....	16.2	15.7	16.0	Brooklyn Borough...	18.2	15.4	15.6
Washington.....		9.8	10.0	Manhattan Boro....	19.5	16.6	16.5
Wisconsin.....		11.8	12.0	Queens Borough....	16.1	14.2	13.8
				Richmond Boro.....	19.0	18.1	17.0
Registration cities of 100,000 population or over in 1910:							
Birmingham, Ala....		18.2	19.5	Rochester, N. Y....	14.6	14.4	14.6
Los Angeles, Cal....		13.7	14.0	Syracuse, N. Y.....	14.5	14.5	15.4
Oakland, Cal.....		14.2	12.7	Cincinnati, Ohio....	19.1	16.5	17.4
San Francisco, Cal..	20.9	15.0	15.1	Cleveland, Ohio....	14.9	12.9	14.3
Denver, Colo.....	17.2	17.0	16.4	Columbus, Ohio....	15.4	14.0	15.4
Bridgeport, Conn....		14.4	15.2				
				Dayton, Ohio.....		15.4	14.8
New Haven, Conn....	17.3	16.9	16.5	Toledo, Ohio.....	14.3	14.6	14.6
Washington, D. C....	20.5	19.0	19.6	Portland, Ore.....		9.8	11.0
Atlanta, Ga.....		17.2	18.9	Philadelphia, Pa....	18.1	16.4	17.4
Chicago, Ill.....	14.5	14.6	15.1	Pittsburgh, Pa.....	19.9	15.8	17.9
Indianapolis, Ind....	15.4	14.3	16.3				
				Scranton, Pa.....	16.2	16.3	16.4
Louisville, Ky.....	18.6	15.5	16.7	Providence, R. I....	18.8	16.1	17.7
New Orleans, La....	22.4	20.2	21.3	Memphis, Tenn.....	18.3	20.1	21.4
Baltimore, Md.....	20.0	18.7	19.2	Nashville, Tenn....		18.1	18.7
Boston, Mass.....	18.8	16.8	17.2				
Cambridge, Mass....		14.7	15.0	Richmond, Va.....		20.7	22.6
				Seattle, Wash.....		10.0	10.1
				Spokane, Wash.....		12.6	13.0
				Milwaukee, Wis.....	13.2	13.7	13.8

¹ Deaths are not registered in many states. The rates given are for that part of the country included in the "registration area" by the Census Office, and for which satisfactory returns are obtainable. All rates are based on revised estimates of population derived from the census of 1910 or state censuses of 1905, except as indicated.

² Includes District of Columbia.

³ Non-registration.

⁴ Exclusive of stillbirths.

⁵ Includes only municipalities having a population of 1,000 or over in 1900.

has taken an active interest in the extension of registration laws, especially those for the registration of births. Complete birth registration is indispensable for the study of infant mortality, which, under the act of Congress, is made one of the special subjects with which the Children's Bureau is to deal. Through Miss Lathrop's activity the Federal-

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tion of Women's Clubs has undertaken work for the improvement of birth registration throughout the country, which is now far more defective than the registration of deaths.

Death Rates.—The annual crude death rates per 1,000 population, for all registration states and cities of 100,000 population or over, for the years 1901-5, 1909, and 1910, are given in the accompanying table. It should be remembered in comparing the crude death rates that such figures are affected by peculiarities of the distribution of population. Color, race, sex and age should be considered. This caution is especially necessary in comparing the death rates for cities of 100,000 population. The rates shown for the large American cities are all low and without ex-

ception indicate a very favorable mortality. The high rates shown for cities of the South are due to the large proportion of colored population, which under the conditions at present existing has practically always a higher mortality than the white population. The low death rates shown for Seattle, Portland, and certain other cities, are dependent to some extent on the favorable age distribution of the population.

International Statistics.—In the following pages are given tables taken from the latest annual report and summary of the Registrar-General of Great Britain, showing death rates in the world's principal cities, birth and death rates in principal countries, and death rates in principal countries from certain important causes of death.

ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, WORLD'S PRINCIPAL CITIES, 1881-1911

(Annual Summary, Registrar General of Great Britain, 1911)

CITIES	1881- 1885	1886- 1890	1891- 1895	1896- 1900	1901- 1905	1906- 1910	1910	1911	Decrease per cent. between 1881-5 and 1906-10
London	20.9	19.7	19.8	18.5	16.4	14.9	13.7	15.0	28.7
Edinburgh	19.6	19.7	19.7	19.0	17.6	16.8	15.7	16.0	14.3
Glasgow	26.0	23.1	22.8	21.2	20.1	19.0	17.1	17.7	26.9
Dublin (reg. area)	27.5	26.6	25.7	25.6	23.3	21.6	19.9	21.4	21.5
Belfast	24.7	24.4	25.1	23.4	20.8	19.6	18.6	17.2	20.6
Melbourne	20.1	21.0	16.7	15.5	14.0	12.9	12.7	12.8	35.8
Sydney	20.8	17.9	14.3	12.1	11.4	10.5	10.4	10.9	49.5
Montreal	31.0	26.7	25.3	23.1	23.3	22.6	22.4	.....	27.1
Toronto	20.7	20.1	15.2	14.6	16.3	18.2	21.3	.....	12.1
Paris	24.4	22.9	21.1	19.1	17.9	17.5	16.7	17.2	28.3
Brussels	23.4	21.2	20.2	17.2	15.2	14.1	13.6	13.9	39.7
Amsterdam	25.1	22.4	19.2	16.7	14.7	13.1	12.2	12.4	17.8
Rotterdam	24.2	22.0	20.8	18.0	15.6	13.4	12.2	12.1	44.6
The Hague	23.3	20.8	18.7	16.2	14.4	13.2	12.5	12.7	43.3
Copenhagen	22.3	22.3	20.2	17.6	16.1	15.1	14.2	14.8	32.3
Stockholm	24.3	21.2	20.0	18.2	16.1	15.1	14.6	12.7	37.9
Christiania	19.9	22.3	19.0	17.5	15.3	12.9	11.9	13.5	35.2
St. Petersburg	32.9	27.0	25.6	25.8	23.7	25.6	24.1	20.8	22.2
Moscow	33.3	33.6	29.2	28.7	26.6	27.6	26.9	27.2	17.1
Berlin	26.6	22.5	20.5	18.1	17.0	15.5	14.7	15.6	41.7
Hamburg	25.2	25.3	24.2	17.3	16.3	14.8	14.2	14.7	41.3
Dresden	25.0	22.1	20.6	19.0	17.6	14.7	13.8	14.6	41.2
Breslau	31.3	28.8	27.8	26.3	23.7	20.8	19.1	19.5	33.5
Munich	30.4	28.3	25.8	23.9	21.0	17.5	15.9	15.8	42.4
Vienna	28.2	25.1	24.1	21.1	19.1	17.1	16.6	16.4	39.4
Prague	28.9	26.1	22.7	19.8	18.6	16.1	15.5	16.3	44.3
Budapest	31.5	30.8	25.5	21.6	19.8	19.5	18.4	19.4	38.1
Trieste	31.1	30.4	29.8	27.5	26.3	24.5	22.9	24.0	21.2
Milan	30.3	30.4	27.4	23.2	22.1	19.3	17.1	20.1	36.3
Turin	27.2	23.5	21.6	19.8	19.6	17.5	14.9	?	35.7
Venice	29.1	30.2	27.8	25.8	24.2	22.9	19.0	22.8	21.3
Bucarest	.....	.....	.....	24.6	23.3	24.7	25.6	26.1	.....
New York	27.5	25.8	24.6	20.3	18.9	17.0	16.0	15.1	38.2
Chicago	21.5	19.5	20.6	15.2	14.2	14.5	15.1	14.6	32.6
Philadelphia	22.3	20.6	21.1	19.2	18.1	?	?	16.5	?
Boston	24.7	23.4	23.5	21.1	18.8	17.9	17.2	17.1	27.5
Rio de Janeiro	30.5	33.1	38.2	29.2	26.3	22.5	20.6	20.4	26.2

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ANNUAL BIRTH RATES IN PRINCIPAL COUNTRIES, PER 1,000 PERSONS LIVING, 1881-1910

(Annual Report, Registrar General of Great Britain, 1910)

Countries (arranged in order of rates in 1901-5)	Quinquennial Periods						Years	
	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910	1909	1910
Russia (European).....	49.1	48.2	48.2	49.3	47.7	.....	.....	.....
Bulgaria.....	37.2	35.9	37.5	41.0	40.6	.....	40.6	.....
Roumania.....	41.8	40.9	41.0	40.2	39.4	40.3	41.7	39.8
Jamaica.....	.....	36.8	38.6	38.9	39.0	37.5	37.8	38.6
Ceylon.....	.....	30.3	31.7	37.2	38.8	37.5	37.5	39.0
Servia.....	46.3	43.7	43.3	40.1	38.7	.....	38.5	.....
Hungary.....	44.6	43.7	41.7	39.4	37.4	36.7	37.7	35.7
Chili.....	39.1	35.5	37.0	35.0	36.4	38.3	38.8	38.4
Austria.....	38.2	37.8	37.4	37.3	35.6	33.6	33.4	32.5
Spain.....	36.4	36.0	35.3	34.3	35.3	33.6	33.5	33.1
Prussia.....	37.4	37.3	36.9	36.5	34.8	32.3	31.7	30.5
German Empire.....	37.0	36.5	36.3	36.0	34.3	.....	31.1	.....
Italy.....	38.0	37.5	36.0	34.0	32.6	32.4	32.4	32.9
Japan.....	.....	28.5	28.6	31.1	31.7	.....	34.2	.....
The Netherlands.....	34.8	33.6	32.9	32.1	31.5	29.6	29.1	28.6
Finland.....	35.5	34.5	31.8	32.6	31.3	31.0	31.3	30.2
Scotland.....	33.3	31.4	30.5	30.0	29.2	27.6	27.3	26.2
Denmark.....	32.4	31.4	30.4	30.0	29.0	28.2	28.2	27.5
Norway.....	31.2	30.8	30.2	30.1	28.6	26.3	26.1	26.1
England and Wales.....	33.5	31.4	30.5	29.3	28.2	26.2	25.8	25.1
Switzerland.....	28.6	27.5	27.7	28.5	27.8	.....	25.5	.....
Belgium.....	30.7	29.3	28.9	28.9	27.7	.....	23.7	.....
New Zealand.....	36.3	31.2	27.7	25.7	26.6	27.1	27.3	26.2
Australian Commonwealth.....	35.2	35.2	32.4	27.7	26.4	26.7	26.7	26.7
Sweden.....	29.4	28.8	27.4	26.9	26.1	25.5	25.6	24.8
Ireland.....	23.9	22.8	23.0	23.3	23.1	23.4	23.5	23.3
Ontario, Province of.....	22.4	22.0	19.9	20.1	21.8	23.7	24.3	24.9
France.....	24.7	23.1	22.3	21.9	21.2	19.9	19.6	19.7

ANNUAL CRUDE DEATH RATES IN PRINCIPAL COUNTRIES, PER 1,000 PERSONS LIVING, 1881-1910

(Annual Report, Registrar General of Great Britain, 1910)

Countries (arranged in order of rates in 1901-5)	Quinquennial Periods						Years	
	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910	1909	1910
Russia (European).....	35.4	33.2	35.8	31.9	30.9	.....	.....	.....
Chili.....	26.9	35.2	32.6	28.8	30.2	31.3	31.5	32.5
Ceylon.....	.....	25.1	28.3	27.0	26.7	30.8	31.0	27.3
Hungary.....	33.1	32.1	31.8	27.9	26.4	25.0	25.6	23.6
Spain.....	32.6	30.9	30.1	28.8	26.0	24.3	24.0	23.3
Roumania.....	26.2	28.7	31.0	27.4	25.5	26.0	27.8	25.2
Austria.....	30.1	28.9	27.9	25.6	24.2	22.3	22.9	21.2
Jamaica.....	.....	23.5	22.0	22.1	22.6	24.4	21.7	23.1
Bulgaria.....	17.7	18.9	27.8	23.9	22.5	.....	26.6	.....
Servia.....	24.5	25.9	28.9	24.8	22.4	.....	29.3	.....
Italy.....	27.3	27.2	25.5	22.9	21.9	21.0	21.5	19.6
Japan.....	.....	20.6	21.1	20.7	20.9	.....	22.0	.....
German Empire.....	25.3	24.4	23.3	21.2	19.9	.....	17.2	.....
France.....	22.2	22.0	22.3	20.7	19.6	19.2	19.3	17.9
Prussia.....	25.4	24.0	22.8	21.0	19.6	17.3	17.0	16.0
Finland.....	22.2	20.0	20.5	19.0	18.0	17.4	16.7	16.6
Ireland.....	18.0	17.9	18.5	18.1	17.6	17.3	17.1	17.1
Switzerland.....	21.3	20.4	19.8	18.1	17.5	.....	16.1	.....
Belgium.....	20.6	20.2	20.1	18.1	17.0	.....	15.8	.....
Scotland.....	19.6	18.8	19.0	18.0	17.0	16.1	15.9	15.3
England and Wales.....	19.4	18.9	18.7	17.7	16.0	14.7	14.6	13.5
The Netherlands.....	21.4	20.5	19.6	17.2	16.0	14.3	13.7	13.6
Sweden.....	17.5	16.4	16.6	16.1	15.5	14.3	13.7	14.0
Denmark.....	18.4	18.7	18.6	16.4	14.8	13.7	13.2	12.9
Norway.....	17.2	17.0	16.8	15.6	14.5	13.8	13.4	13.5
Ontario, Province of.....	11.4	11.0	10.6	11.6	13.0	14.0	14.6	14.0
Australian Commonwealth.....	15.7	14.8	13.3	12.7	11.7	10.7	10.3	10.4
New Zealand.....	10.9	9.9	10.1	9.6	9.9	9.7	9.2	9.7

XXX. THE MEDICAL SCIENCES

DEATH RATES IN PRINCIPAL COUNTRIES PER 100,000 PERSONS LIVING, FROM CERTAIN IMPORTANT CAUSES OF DEATH, 1900 TO 1910

Country	Annual Average: 1900 to 1909	1908	1909	1910 ¹	Annual Average: 1900 to 1909	1908	1909	1910
Typhoid Fever ²					Diphtheria and Croup			
Austria.....	18.4	14.9	1	.....	39.5	28.5	29.0	26.0
Belgium.....	16.0	11.2	1	.....	20.3	16.6	15.0	.....
England and Wales.....	10.2	7.5	6.0	.....	19.4	15.8	15.0	12.0
Holland.....	8.0	6.3	5.4	.....	8.0	6.3	6.0	5.0
Hungary.....	28.2	24.3	30.2	.....	44.3	44.7	45.0	42.0
Ireland.....	11.5	7.7	7.0	.....	8.1	8.5	9.0	8.0
Italy.....	33.1	27.2	28.3	.....	15.1	17.3	17.0	.....
New South Wales.....	20.2	19.3	17.7	.....	8.0	7.7	10.2	.....
New Zealand.....	7.4	9.5	5.7	.....	5.1	3.7	7.0	8.0
Scotland.....	10.3	5.8	1	.....	15.1	14.4	18.0	.....
Spain.....	41.5	31.9	26.9	.....	24.6	19.9	22.0	.....
Sweden.....	8.7	8.8	1	.....	29.7	11.9	13.0	.....
Switzerland.....	5.7	3.8	1	.....	20.1	15.9	16.0	.....
United States (registration area).....	29.5	24.3	21.1	.....	27.3	21.5	20.4	.....
Measles					Cancer			
Austria.....	31.0	28.2	44.0	35.0	74.9	77.5	73.0	73.0
Belgium.....	36.1	40.4	36.0	.....	59.3	63.8	54.0	.....
England and Wales.....	32.3	22.7	36.0	23.0	88.7	92.6	96.0	97.0
Holland.....	30.4	27.2	17.0	.....	98.8	102.8	90.0	93.0
Hungary.....	41.4	44.7	40.0	45.0	40.1	43.4	44.0	45.0
Ireland.....	14.7	19.6	10.0	19.0	71.5	75.8	65.0	68.0
Italy.....	25.4	34.4	32.0	.....	57.9	64.0	53.0	.....
New South Wales.....	2.5	2.0	.....	.....	65.6	66.6	.....	.....
New Zealand.....	5.4	2.0	3.0	0.0	68.1	69.5	82.0	84.0
Scotland.....	34.3	51.9	19.0	.....	87.4	95.5	100.0	.....
Spain.....	54.7	36.3	40.0	35.0	45.4	50.3	44.0	45.0
Sweden.....	7.9	9.1	4.0	.....	1	1	.....	.....
Switzerland.....	17.9	6.4	10.0	.....	129.6	131.3	107.0	.....
United States (registration area).....	9.9	9.9	9.6	.....	69.2	71.5	73.8	.....
Tuberculosis of the Lungs					Scarlet Fever			
Austria.....	331.3	302.0	303.0	288.0	43.9	53.2	57.0	48.0
Belgium.....	114.7	101.0	102.0	.....	13.9	16.3	16.0	.....
England and Wales.....	118.8	111.7	109.0	102.0	11.1	8.0	9.0	7.0
Holland.....	133.3	119.5	123.0	118.0	3.2	5.2	3.0	2.0
Hungary.....	384.5 ¹	370.1 ¹	369.0	348.0	59.8	65.4	52.0	51.0
Ireland.....	208.7	194.7	184.0	172.0	3.8	1.6	3.0	4.0
Italy.....	119.9	121.9	122.0	.....	6.3	10.1	8.0	.....
New South Wales.....	73.0	63.5	.....	55.0	2.6	2.5	.....	.....
New Zealand.....	67.6	64.2	61.0	.....	4.1	6.3	3.0	1.0
Scotland.....	142.5	125.9	127.0	125.0	8.4	7.9	12.0	.....
Spain.....	139.3	134.6	127.0	.....	7.4	11.1	9.0	8.0
Sweden.....	1	1	.....	.....	7.7	4.7	5.0	.....
Switzerland.....	185.8	173.0	163.0	.....	4.4	4.1	5.0	.....
United States (registration area).....	159.4	144.0	137.7	.....	10.6	11.9	11.4	.....

¹ Figures not available.

² The deaths from pulmonary tuberculosis being incomparable, those from tuberculosis have been substituted.

XXXI. RELIGION AND RELIGIOUS ORGANIZATIONS

H. K. CARROLL

PROTESTANT CHURCHES

BAPTIST

Conventions.—The two largest white Baptist bodies in the world, known respectively as the Northern and Southern Baptists, hold great annual conventions for the regulation of the affairs of their missionary and other benevolent societies. The Northern Baptist convention was held in Des Moines, Iowa, the Southern in Oklahoma City, Okla. The latter was attended by nearly 2,000 delegates. The year was reported as one of great activity in all departments of work. The figures for membership were 2,421,203, and baptism had been administered to 132,936. The income for foreign missions was \$580,408, an advance of \$70,000 over the preceding year. In the foreign field there are 24,689 members. The receipts of the Home Mission Board were \$366,050, with which 1,309 workers were maintained. It was decided to raise in the next few years a fund of \$1,000,000 to aid churches in the home field. A committee recommended that one great weekly paper be established for the entire denomination, but the convention rejected the proposal. Commissioners of the two conventions reached an agreement to end the friction that had arisen between the two bodies in New Mexico by acknowledging the claims of the Southern Convention to the state as a part of its territory. The churches of New Mexico approving, the missionary interests of the Northern Convention therein will be transferred to the Southern Baptist Convention. The Northern Convention recommended the annual appointment of a commission on Christian unity.

Russia.—The Baptist work in Russia, which received an impetus at the meeting of the Baptist World Conference in Philadelphia in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 741), was advanced considerably the past year. After several months of patient negotiation with the Russian authorities in St. Petersburg, a Baptist Tabernacle was built and dedicated. The church accommodates 2,000 persons. It is gaining rapidly in membership from all classes and is expected to become self-supporting in two or three years. American Baptists have promised to raise \$125,000 for a building and endowment for a Baptist Theological Seminary in St. Petersburg. More than half the sum has been contributed. The ground has been purchased at a cost of \$13,500, under the direction of the European executive committee. It is in the suburb of Lisnoia, a fine residence quarter.

Reception of Members of Other Denominations.—A step taken by the Mount Morris Baptist Church of New York City, at the suggestion of its pastor, Dr. J. R. Randall, in deciding to receive from other denominations members in good standing, without requiring them to be immersed, has received much attention. The Baptist press condemns the action as a departure from sound Baptist practice, and as a surrender of an important Baptist principle. It is said that close communion is no longer enforced as formerly in Baptist churches and that many Baptist pastors, in administering the ordinance, do not indicate who shall and who shall not receive it. English Baptists and Free Baptists do not require im-

mersion of those who come from other Churches. The same question has become a matter of discussion among the Disciples of Christ, who likewise baptize by immersion.

CONGREGATIONALIST

A New Plan of Administration.—In connection with an account of the triennial meeting of the National Congregational Council in the *YEAR BOOK* for 1910 (p. 728), the appointment of a commission of nineteen to report a plan to give the Council administrative as well as advisory functions was explained as indicating something new in that denomination. The commission has agreed upon a plan and published it in advance of the meeting of the Council in 1913. The main features of the plan are these: The Council is to have, if the plan is adopted, a larger membership and is to meet every two years instead of every three. Delegates are to be appointed from district and state conventions on a definite ratio of membership, and it is provided that the term of service shall be for two sessions of the Council, one-half of the delegates in every Council to be newly chosen and one-half to hold over from the previous Council, this in order to give the body some continuity of membership. A permanent general secretary is to be elected, who will be in effect the executive head of the denomination. The plan further proposes a consolidation of missionary societies, so that there shall be one foreign board and one home board, the Council, if the boards accept the suggestion, to have the power of appointing a majority of the corporate members of the foreign board, and of the home board. The commission expresses the belief that the denomination desires "more direct and complete control of missionary agencies; a certain measure, at present indeterminate, of consolidation of these agencies; both pending and following such consolidation, the closest coördination of the activities of those agencies."

DISCIPLES OF CHRIST

Unification of Benevolent Institutions.—The question of unifying the

interests of the benevolent societies and institutions of this denomination for their greater efficiency has been before the annual conventions for the past six years. Committees have considered the matter, but the crystallization of suggestions and ideas into a systematic plan has been delayed by one cause or another until 1912. A Committee of Seven has formulated a plan which has been published. A constitution is offered for adoption with a preamble which sets forth sufficiently its purpose. This preamble asserts that "there is a widespread feeling among the Disciples of Christ that they need a closer unification of their various missionary, educational and benevolent organizations, and a more general fellowship of the churches," and to this end the constitution providing for a representative convention is recommended for adoption by the annual convention and the churches generally. The plan was opposed by the leading organ of the denomination, the *Christian Standard*, of Cincinnati, which pronounced it fundamentally defective, and contended that "any such affiliation (as the proposed delegated convention) of the congregation with an organization over, above or beyond it is without New Testament precedent." However, the General Convention adopted the plan by an overwhelming vote, making what many consider a radical change in denominational methods.

LUTHERAN

Divisions of the Lutheran Communion.—The Evangelical Lutheran communion occupies an important place among the denominations of the United States. Though it is much divided there is a general harmony of creed among its branches, all accepting the Augsburg Confession and other related doctrinal symbols. Their polity, which emphasizes the powers of the local congregation, accounts largely for the numerous divisions and at the same time minimizes their significance. By immigration and otherwise Lutheran bodies have grown rapidly, especially the General Synod, the oldest general body, the General Council, which is a little

more stringent in its confessional position, and the Synodical Conference, the most rigid of all in its adherence to the "Book of Concord." The latter body has become very strong, with a large German constituency, returning over 740,000 communicants. Among large, prosperous, independent bodies are the Synod of Ohio, with about 132,000 communicants, and the Iowa Synod, with 110,000 communicants. The Swedish Lutherans are massed almost entirely in the General Council, having a synod, the Augustana, to themselves, and numbering more than 172,000 communicants. The Norwegians and Danes are divided into several independent bodies, there being four synods of Norwegians and two of Danes. There are also several bodies of Icelandic and Finnish Lutherans, and a synod of Slovaks.

Prospects of Organic Union.—There is at present no general movement for organic union among the 23 separate organizations, although in confessional agreement many of them have been approaching nearer to one another. In India, where a number of European and American Lutheran bodies have missions, a second All-India Lutheran Conference was held at the beginning of 1912. It was attended by 81 delegates, and sermons were preached in Tamil, Telugu, German and English. It was agreed, after some discussion, that the Lutheran system is sufficiently distinctive to justify continued separate existence in India. At the same time, federation with other bodies was regarded favorably. No proposal for the union of Lutheran mission churches came before the conference, which embraces about 250,000 Lutheran population, according to the late census of India.

Deaconesses.—The deaconess movement, in which Germany has been in advance, has a large place in the Lutheran communion. The ninth conference of Lutheran deaconess mother houses was held the past year in Chicago, eight mother houses being represented. They reported 353 members and probationers, an increase of 40 in two years. The spirit of harmony prevailed among the representatives of four nationalities and as many different church branches.

METHODIST

The Methodist Episcopal Church.—The quadrennial General Conferences of four of the larger Methodist bodies were held in May, 1912. As these are supreme legislative and administrative bodies the year is the most eventful of the period, involving changes in the general officials, including bishops, in the discipline and in the general societies. The General Conference of the Methodist Episcopal Church was held in Minneapolis, occupying nearly the whole month of May. There were about 825 delegates from conferences in the United States, South America and Mexico, various countries of Europe, India, Malaysia, the Philippines, China, Korea and Africa.

Bishops Retired and New Bishops Elected.—Three bishops were retired for age or other reasons—Bishop Henry W. Warren, presiding bishop, who died subsequently; Bishop David H. Moore, and Bishop Thomas B. Neely. Eight bishops, with two missionary bishops, were elected to fill vacancies and to strengthen the force. The choice fell, after days of balloting for most of the new men, upon Homer C. Stuntz, secretary of the Board of Foreign Missions; Theodore S. Henderson, pastor in Brooklyn, N. Y.; William O. Shepard, district superintendent in Chicago; Naphtali Luccock, pastor in Kansas City, Mo.; Francis J. McConnell, president of De Pauw University, in Indiana; Richard J. Cooke, book editor of the Methodist Publishing House; Frederick D. Leete, pastor in Detroit, and Wilbur P. Thirkield, president of Howard University, Washington, D. C. The new missionary bishops were John W. Robinson, missionary in northern India, and William P. Eveland, president of the Methodist Seminary at Williamsport, Penn. The missionary bishops are to serve in southern Asia, Bishop Robinson in India and Bishop Eveland in Malaysia and the Philippine Islands.

Legislation Concerning Bishops.—The legislation affecting the office and work of bishops was important and for the most part was along new lines. Hereafter instead of retiring bishops, after consideration in com-

mittee, by ballot of the Conference, a method often attended by painful scenes and followed by some protests from the body of the Church, they are to be retired automatically by age limit. By the provisions of the new legislation a bishop may retire voluntarily at the age of 70 years; at the opening of the General Conference nearest his seventy-third birthday a bishop must retire, and the General Conference may release a bishop at any age and for any reason it may deem sufficient. Similar enactments apply to missionary bishops.

A new plan affecting the administration of the bishops was adopted, designed to remedy some of the evils which have grown up under the itinerant feature of the general superintendency. Heretofore the bishop resident in New York City might or might not preside in the conferences contiguous to his residence. If he did not he had no supervision over them, but the bishop in charge might be the bishop resident at San Francisco. The new system is in outline as follows: The annual conferences are divided into groups, the center of which is an episcopal residence. For example, New York is the center of one group, Washington of another, Chicago of another, New Orleans of another, and so on, the General Conference itself selecting, as heretofore, the places for episcopal residence and appointing the bishops to them. These 19 groups are further arranged in three divisions or zones, as nearly equal as possible. The groups indicate the limits of residential supervision; the zones have to do with presidential supervision. The eastern zone or division embraces six groups and as many bishops, the central division, six groups, and the western division, seven groups. The bishops in arranging for the holding of conferences are expected to appoint to presidencies of conferences within a division the bishops resident therein. Presiding bishops will have supervision of the conferences assigned to them for 30 days before and 30 days after, and then the supervision shall pass for the remaining ten months of the year to the bishop resident within the particular group to which the conferences in

question belong. This plan, it is believed, will leave no conference without episcopal supervision on the ground or near at hand. It was opposed by some as the entering wedge of a diocesan episcopacy, but it was adopted by a large majority. Three new episcopal residences were selected: Kansas City, Kan.; Atlanta, Ga., and Helena, Mont. An additional \$1,500 a year was granted to bishops and missionary bishops for secretarial aid and for house rent and maintenance, making the total to each bishop \$6,500 a year. In consideration of this increase bishops are forbidden to accept fees for service to churches and colleges or to enter into contracts for "outside service." An amendment to the constitution permitting the election of bishops "for work among particular races and languages," intended to provide for Negro bishops for Negro conferences, goes down for consideration by ministers and laymen.

The Amusement Question.—The disciplinary provision classifying dancing, playing at games of chance, theatre-going and the like, together with engaging in the liquor traffic, as imprudent conduct, subjecting members engaging in them to admonition, trial and expulsion, has been the subject of hot discussion in several General Conferences. The bishops have at least twice recommended the removal of the provision concerning dancing, etc., from this part of the *Discipline* and its inclusion under the chapter of advices. Ministers and laymen have urged that the change be made, insisting that as law the provision is not and cannot be enforced, and that the moral effect of advising that these amusements be not indulged in, would be greater than to keep a stringent law unenforced against them in the *Discipline*. The General Conference, however, again voted not to make the change, the majority of voters, including delegates from foreign conferences and from foreign-speaking and Negro conferences in this country, taking the ground that the world would infer if the law were abrogated that the church had let down the bars and was ready to approve the things it had so long specifically condemned.

General Deaconess Board.—A constant subject of irritating differences and consequent agitation has been that of the supervision of deaconesses, involving on the one hand the officers of the Woman's Home Missionary Society and those of the Deaconess Board on the other. The control of all deaconesses is now put in the hands of a General Deaconess Board, and it is believed that the agitation will subside. The institution has become a very large and important one, and many deaconesses serve in home-mission work, particularly in the large cities, as helps to pastors and as nurses in hospitals, and conduct homes of various kinds.

Revision of the Ritual.—A commission reported after years of work a revision of the ritual which proposed verbal and other important changes in the forms long in use for the observance of the Lord's Supper, the burial of the dead, marriage, etc. After some discussion in which it appeared that some of the changes were deemed too radical, the revision was rejected and the subject referred to a special committee to report to the next General Conference.

Among other plans that failed to approve themselves to the majority were proposals to reduce the size of the General Conference, which has become unwieldy; to change back to "presiding elder" the designation "district superintendent," to introduce laymen into the annual conference, to establish a supreme court which should, among other duties, pronounce upon the constitutionality of General Conference legislation, and to consolidate a number of the *Advocates*. Among acts adopted were the following: consolidation of the Book Concern, with one general agent and three local agents; reduction in price of all *Advocates*, save the New York, to \$1 a year; creation of a commission of finance to unify field work and appeals of the Benevolent Society; provision for the sesqui-centennial of American Methodism to be celebrated in 1916.

Federation and Organic Union.—On the subject of federation and organic union the Conference was apparently unanimous and enthusiastic. It approved the report of negotiations for

union (see *Comity, Federation and Organic Union, infra*) with the Methodist Episcopal Church, South, and the Methodist Protestant Church, authorized the commission to continue its work and "cordially invited" other Methodist bodies "to join in a persistent effort to unify the various branches of the Wesleyan family in America in one great Methodist Church." It approved the Federal Council of Churches of Christ in America, authorized the appointment of a commission to represent the Church in the World Conference of Faith and Order proposed by the Protestant Episcopal Church, and gave authority for the appointment of a commission to confer with colored Methodist Churches on matters of more harmonious relations. It also approved the creation of a federal council for the Methodist Episcopal Church and the Methodist Episcopal Church, South, to decide questions arising between the two denominations, and directed administrative officers, annual conferences, societies, etc., "carefully to regard" its decisions and recommendations. These will have to do mainly with the organization of churches by either body in places already sufficiently occupied by churches of the other body. (See also *Comity, Federation and Organic Union, infra*.)

Statistics of the Methodist Episcopal Church.—The net increase of communicants in 1911 was not very encouraging, numbering a little less than 48,000. The total, including foreign missions, is 3,543,589. There are 18,988 itinerant ministers, and 28,458 churches. The value of church property is \$183,542,603, and of parsonages \$32,747,834. There are 35,445 Sunday Schools, with 3,567,548 scholars.

Methodist Protestant.—The quadrennial General Conference of this non-episcopal body was held in Baltimore in May. The Rev. Lyman E. Davis, D.D., of Sharpsburg, Penn., was elected president, succeeding Dr. T. H. Lewis in that office, which continues for four years, the vote being 78 to 71 between these two candidates. The chief business before the conference was the report on negotiations for union with the Metho-

dist Episcopal Church and Methodist Episcopal Church, South. The report described the project as the largest ecclesiastical proposal ever submitted to the Christian world, involving, as it does, the union of more than 5,000,000 members of the three Churches, into one Church with vast administrative and property interests. Substantial progress had been made, but further steps must wait upon the action of the other two Churches. The commission was continued for another quadrennium. The conference also approved of negotiations for union with the United Brethren in Christ. (See *Comity, Federation and Organic Union, infra.*)

The conference appointed a commission to revise the *Discipline*, approved the creation of a denominational fund for superannuates, and authorized the organization of a Methodist Protestant Brotherhood. It also suggested the joint celebration in 1916 of the sesqui-centennial of the beginning of American Methodism.

The Methodist Protestant Church has 31 annual conferences and 12 missions, four of the latter being colored. There are 182,767 communicants, 1,271 itinerant ministers, 2,419 church edifices, valued at \$8,934,740, and 2,209 Sunday Schools with 151,202 scholars. The contributions of the last four years for all purposes aggregated a sum of more than \$5,000,000.

Colored Methodists.—Two large bodies of colored Methodists held their quadrennial General Conferences in May, 1912—that of the African Methodist Episcopal Church in Kansas City, Mo., and that of the African Methodist Episcopal Zion Church in Charlotte, N. C. The latter considered at length important publication and educational interests, the action taken being designed to strengthen and make more effective the work in these two departments. The bishops recommended that no new bishops be chosen, but the conference resolved to elect two. After many fruitless ballots the resolution was reconsidered and the conference adjourned without any additions to its episcopal force. The Church reports 547,216 members, with 3,488

itinerant ministers and 3,298 churches.

The General Conference of the African Methodist Episcopal Church elected four new bishops, John Hurst, W. L. Chappelle, J. H. Jones and J. C. Conners, and created a new episcopal district, the fifteenth. Two of the bishops serve in Africa, one on the West Coast, and one in the South. Four years hence the Church will celebrate the centenary of its existence. It has 59 annual conferences, 6,774 itinerant ministers, 5,630 churches, and 620,234 communicants.

The British Wesleyan Church.—The Mother Church of all Methodism, the Wesleyan body, which has affiliated conferences in Ireland, France and Africa, consecrated in London, early in October, what is called the British Methodist Cathedral. It stands on historic ground, near Westminster Abbey, and is outclassed in architectural majesty only, it is said, by St. Paul's Cathedral and the British Museum. The exterior sculpture symbolizes the various activities of the Church, and figures of the four Evangelists adorn the building. The ground on which it stands cost approximately \$500,000, and the building, which covers an area of 30,000 sq. ft., exclusive of the furnishings, about \$780,000. The money was appropriated from the Twentieth Century Fund, begun in 1898, and completed in 1904, when it amounted to about \$5,400,000. Various denominational societies are to have their headquarters in this great central structure, and missionary and institutional church work will be carried on from within its walls.

The Wesleyan Church has been experiencing, in company with many other denominations, a decline in its numerical strength. Beginning with 1907, it has had six successive decreases in members, averaging about 2,600 a year. Of the 771 circuits and stations, 361 show a net increase, 355 a net decrease, and 55 no change. There is also a falling off in the number of candidates for the ministry. Emigration to America, Australia and other countries, probably accounts in part for the diminution in numbers.

Church Union in Australasia.—Beginning in 1901, the process of consolidating the Wesleyan Methodist, United Free Methodist, Primitive Methodist and Bible Christian Churches in Australasia, proceeded until all these branches, with the exception of the Primitive Methodist of New Zealand, were merged in the Methodist Church of Australasia. The New Zealand body has now, 1912, voted almost unanimously to come into the united Church, so that there is now but one Methodist in Australia, New Zealand and Fiji. In Australia it is second among Protestant denominations, in New Zealand third, and in Fiji it is the Church of the people, embracing 84,000 out of 90,000 of the native population.

PRESBYTERIAN

The Southern Presbyterian Church.—The Southern Presbyterian General Assembly, in May, 1912, received a report that the presbyteries had rejected a proposed amendment of the article of the "Confession of Faith" on infants dying in infancy. The desire has been to change the article so as to eliminate the implication that there are non-elect infants. The amendment sent down in 1910 was rejected. Another differently worded was rejected in 1911 (see *AMERICAN YEAR BOOK*, 1911, p. 742). A third amendment has now been submitted, beginning as follows: "Being elect, all infants dying in infancy are saved and regenerated." A committee was named to prepare and publish a "brief popular statement of the doctrines of the Church." The Committee on a Presbyterian University, appointed in 1911, reported that at present there is no general demand for such an institution, but it can be established hereafter if the need becomes apparent. An overture to establish a judicial tribunal having been defeated by the presbyteries, another was sent down. A committee was appointed to confer with a similar committee of the United Presbyterian Church on organic union of the two bodies. There was an increase of 5,071 communicants, the whole number being 202,845.

The Northern Presbyterian Church.—The net increase of communicants in the Northern Presbyterian Church was 25,605, the total number being 1,380,058. It was accordingly less than 2 per cent. Returns to the General Assembly in May, 1912, showed that out of 9,935 churches, 3,739 reported no net additions, 4,086 reported additions of one to ten, and 1,500 of 11 to 25. The Committee on Evangelistic Work regarded this condition as very unsatisfactory. The Committee on Education called attention to the fact that in 15 years the population of the country has increased by millions and the membership of the Presbyterian Church by tens of thousands, but the supply of ministers and missionaries by only 168. Nearly 1,000 churches are without pastors. The Committee on an Intermediate Catechism reported a catechism of 73 questions and answers, as the result of four years' work, which was approved and ordered published. The Church has 9,274 ministers, 10,030 churches, 1,232,847 scholars in Sunday School, and its total income for the year was \$25,798,615.

Presbyterian Union in Scotland.—Union between the Church of Scotland (Established) and the United Free Church has been a matter of discussions and resolutions in the general assemblies for some years. The subject was uppermost in the proceedings of the two assemblies in 1912. Lord Balfour led the discussion in the assembly of the Established Church, and Dr. Young in the Assembly of the United Free Church. Lord Balfour had sent a memorandum to the Committee of the United Free Church, proposing that the two Committees come to an agreement concerning questions of creed and church order, and then take up the critical point involved in the "Auld Kirk's" relation to the Government, expressing his belief that the latter Church would be willing to break its association with the State so far as necessary to secure to it entire liberty to regulate its internal affairs without reference to Parliament, but would not agree to surrender its endowments. The assembly of the older body seemed not disposed at

first to approve the Balfour memorandum, but after full discussion the opposition dissolved and the document was approved without a dissenting vote. The question in the assembly of the United Free Church was whether that body could be true to its antecedents and principles if it consented to the measure of state association involved in retaining the endowments. There was a minority who stubbornly insisted that there must be both disestablishment and disendowment, and that the Church of Scotland must abandon every advantage derived by its connection with the State; but the longing for union overbore the contentions of the minority, and in the final vote only 13 commissioners were found in the negative. The two committees will, therefore, proceed with the negotiations and a favorable issue is confidently expected, as the ecclesiastical differences offer no great difficulty with the political question out of the way. Both Churches reported losses in membership.

PROTESTANT EPISCOPAL

World Conference on Faith and Order.—The Rev. Wm. T. Manning, of New York, chairman of the committee on plan and scope, visited Great Britain the past summer, in company with Bishop Anderson of Chicago, chairman of the commission, and the bishops of Vermont and southern Ohio, to confer with persons high in authority in the Church of England concerning the proposed Conference, the purpose of which is to bring Christians of the world into unity. The invitation is to "all Christian communions throughout the world, which confess our Lord Jesus Christ as God and Saviour." It is understood that the Archbishops of Canterbury and York and the Bishops of London, Winchester and Gloucester and other bishops and churchmen encouraged Dr. Manning and his deputation to hope for an agreement to hold the conference in the United States. As the initiative and the invitation came from America it would seem proper that the Conference should be held in America, probably in New York City. The

archbishops are to appoint a committee to represent the Anglican Church in endeavoring to make the Conference a success. This committee is expected to "organize, support and help" the movement in England; "to stimulate general interest and regular and widespread prayer; to extend invitations to other religious bodies in England to participate in the Conference"; and to "hold itself in readiness to confer with such bodies and committees as might be appointed in the non-episcopal Churches; or, if so be, with those who might represent the Roman and Eastern Churches." The Episcopal Churches of Ireland and Scotland will coöperate in their respective countries and probably appoint commissions.

Nearly all the leading denominations of the United States, Baptist, Congregational, Methodist, Presbyterian and Reformed, have appointed commissions to confer concerning such proposals as may be made for the holding of the Conference. The Roman Catholic Church may not be represented officially, but it is expected that members of that communion will, on their individual responsibility, take some part in the arrangements for, and the proceedings of the Conference.

A prominent minister of the Disciples of Christ, a denomination which makes much of Christian union, says that Christendom takes four positions on the subject of Christian oneness: (1) Those who are satisfied with the measure of unity now possessed; this class, he says, is constantly decreasing; (2) those who favor federation as the practical goal to be reached; this position is held by a large body of Protestants; (3) those who regard federation only as a step toward the desired end, a growing group; (4) those who want organic union, and nothing less than organic union; in this class he places the Protestant Episcopal and Roman Catholic Churches.

The Cathedral of St. John the Divine.—This great modern basilica, on Morningside Heights, New York City, is progressing toward completion. The funds required are coming in encouragingly, and the trustees announced in October that the last of

the seven chapels which are to form the group, has been presented, making an aggregate of about \$1,000,000 given for the chapels alone. These chapels, differing in architecture, are intended to accommodate different groups of worshippers. The Italians are holding services in one. Among the chapels are two commemorative of Bishop Potter and Dr. Huntington. Plans for a deanery, a cathedral choir school and a synod hall have been approved by the trustees, and the work of building is in progress.

An Episcopal Church in China.—The Holy Catholic Church of China was organized in Shanghai in April, 1912. It embraces missions and mission churches belonging to the Protestant Episcopal Church and the Anglican Church of England and Can-

ada. There are 11 missionary dioceses in China, of which seven are English, three American, and four Canadian. Ten bishops attended the conference, 22 foreign and 15 Chinese clergymen, and four foreign and 25 native laymen.

Statistics.—The Protestant Episcopal Church is growing steadily. It has 91 dioceses and missionary jurisdictions in the United States and 12 in other countries, including Cuba, Mexico, Brazil, the Canal Zone, China and Japan, Africa and Europe. The number of clergy in the United States is 5,359, of churches 7,621, and of communicants 947,320. Including other countries, there are 963,097 communicants. The total contributions for all purposes in 1911 was \$18,692,211.

THE ROMAN CATHOLIC CHURCH

The Eucharistic Congress.—The Eucharistic Congress is one of the most notable general gatherings of Roman Catholics. In 1912 the Congress was held in Vienna, Austria, and over 80,000 tickets were issued to foreigners, or more than four times as many as were required for the Montreal Congress of 1910. Cardinal Van Rossum represented the Pope and rode in the procession, which is always a striking feature of the Congress, in a ponderous golden vehicle built for the Empress Maria Theresa. Emperor Francis Joseph preceded the Cardinal, who bore the Host. A Papal letter was read conferring the apostolic blessing upon the Congress and urging more diligence in the care of the young to prevent them from being led astray by wrong teachings and by temptations of the flesh. Great disappointment was expressed at the small attendance of clergy from France. It was hoped that a demonstration might be given against the attitude of the French Government toward the Church. So few French ecclesiastics were present that no place was given to them in the programme and this led to vigorous protests from prominent dignitaries of the church in France, which, it was said, would be carried to the Pope.

The Guardians of Liberty.—The formation of a patriotic "court" with this name has served to stir the sensibilities of Roman Catholic citizens, who apprehend that it may be a movement toward proscription. Gen. Nelson A. Miles, U.S.A., Rear-Admiral George W. Baird, U.S.N., and other public men, including Protestant and Jewish ministers, are officers of the Court. The organization is not secret. Its constitution declares as its principles (1) "to unite as a non-sectarian, non-partisan, non-racial moral force to promote pure patriotism and a sacred regard for the welfare of the country"; (2) to maintain that "no temporal allegiance" can be superior to the obligation to the Constitution of the United States; (3) to oppose the manipulation or control of the "sovereign citizenship of our people" by "any political or ecclesiastical organization"; (4) to insist that "every citizen shall exercise the rights and privileges" of his citizenship "unmolested" and "answerable only to his conscience and his God"; (5) and "to protect and preserve the free institutions of our country, especially our educational system, against any foreign or menacing influence" and public funds or lands from diversion "to any religious purpose."

Religious Garb in Indian Schools.—

A dozen years ago or more Congress decided that it would not thereafter make appropriations to denominational schools among the Indians nor any sectarian appropriations whatever, thus bringing to an end the system of contract Indian schools inaugurated by President Grant. The Government has, however, continued to use certain Roman Catholic schools and employed therein Catholic teachers wearing the distinctive garb of nuns and monks. Commissioner Valentine, of the Bureau of Indian Affairs, issued an order early in 1912 prohibiting after Sept. 1 the use of any religious garb or insignia in the Indian schools. Roman Catholics protested, and the Secretary of the Interior held a hearing on the subject, Protestant ministers and organizations generally supporting the Commissioner's order. The President suspended the order until further examination of the question could be made, and after some months' consideration confirmed the suspension with the proviso that hereafter no teachers shall be appointed who wear a religious garb. About a hundred Roman Catholic teachers are employed in Indian schools, all accepted by a ruling of the Civil Service Commission for employment in the Government service. The President's decision is not approved by the Protestant press.

The *Ne Temere* decree issued by the Pope in 1908, to which reference was made in these columns last year (*AMERICAN YEAR BOOK*, 1911, p. 734), continues to give rise to controversy, protests and litigation. It will be recalled that it declares invalid marriages entered into by Catholics with Catholics, or Catholics with non-Catholics unless performed by the parish priest of the community where they are celebrated. In Canada the question has been in the courts, and the Supreme Court of the Province of Quebec declared, in a suit brought against a newspaper for defamation of character, that the parties concerned having been married according to the laws of the Dominion, it was wrong to call the wife a concubine, and awarded substantial damages to the complainant. Subsequently the

Supreme Court of the Dominion affirmed the decision of a provincial court declaring valid a marriage of two Catholics performed by a Protestant minister. The Privy Council, however, has declared a proposed act of the Dominion Parliament, declaring valid all marriages duly performed, to be an infringement of provincial rights (see IV, *Canada*). Requests to the Holy See to modify the decree as respects mixed marriages have been without result so far except in Germany and Hungary, where the decree, it appears, has been suspended. Priests in the United States, in obedience to the decree, have in some cases pronounced the children of mixed marriages, not celebrated by a priest, illegitimate, and so entered the declaration in baptismal certificates.

Statistics.—The Roman Catholic Church continues to grow in the United States by immigration and otherwise. At the beginning of 1912, the date of the latest statistics, the Church had, exclusive of Porto Rico and the Philippines, for which five or six millions are claimed, 15,015,569 "population." Population includes all baptized persons who have not been excommunicated. The actual number of communicants is obtained, according to a rule adopted by the prelates many years ago, by deducting 15 per cent. from the "population," to cover baptized children who have not been confirmed. Applying this rule to the "population" of 1911, it would appear that the number of communicants was 12,763,234. The gain in communicants for the year was 337,287. There are 17,491 clergy and 13,939 churches and missions, the churches with priests connected numbering 9,256. The number of priests and churches is much smaller than obtains among Protestant denominations. The average to each priest is nearly 730, while in the largest Protestant church, the Methodist Episcopal, it is only 168. The hierarchy of the Roman Catholic Church in the United States, including the colonial possessions, embraces 14 archbishops, of whom three are cardinals, and 97 bishops. It has 5,119 parochial schools, with 1,333,786 scholars.

THE SALVATION ARMY

The death of the founder and general of the Salvation Army, William Booth, which occurred in London, Aug. 20, removed one of the most heroic characters in his generation in the religious world. A man with a great dominant idea—to reach and rescue the multitude of prodigals, he gave his life, his talent for leadership and organization to the formation on the military plan in all parts of the world of corps of zealous workers, themselves, to adopt Wesley's expressive phrase, "brands snatched from the burning." The consensus of opinion of the denominational leaders of the Christian world seems to be that the time, the circumstances, the conditions united in summoning from the ordinary ministerial rank for a supreme effort the man whose compassion for the "submerged masses," huddled in the "Whitechaps" and "Tenderloins" of the cities, and whose confidence that the Gospel of Christ was the one effective force for their leavening indicated his special call to the mission. The churches generally were not doing for this class of city and town population what they were doing for the more fortunate and more tractable classes. If anything of permanent value was to be done for the slum dwellers some form of organization was necessary. Their prejudices against the Church forbade the use of ecclesiastical terms and institutions. The experience of Booth as a street preacher and as a missionary led him to believe that military organization and military terms and usages would best meet the conditions; thus the Salvation Army was organized. Instead of churches there are barracks; instead of ministers, a General, commanders, colonels, majors, captains, adjutants, lieutenants, sergeants. The General is the supreme head, and is a dictator whose orders are everywhere accepted and obeyed. Commanders hold rank from the appointment of the General, and are, under him, at the head of the organization in the various countries. Officers are promoted from the lower to the higher positions; but the commanders, so far, have been members of the General's immediate family.

William Booth was born in Nottingham, England, April 10, 1829, and educated in a private school. He studied theology and entered the Methodist New Connection in 1850, doing regular circuit work, but he did not feel that he was fitted for this humdrum employment. He wanted, he said, "to get out into the wide sea of misery surging and sweltering about him." As the Conference was unwilling to allow him to work in his own way he withdrew in 1861 and left, he said, every friend he had in the world. He began his independent evangelism in Cornwall, going thence to Cardiff and to Walsall, where he organized a "Hallelujah band," whose members were drawn largely from the criminal classes. He removed to London in 1864 and settled with his wife in Whitechapel, where he found "a continent of misery and vice around" him. His labors were fruitful and led to the organization of the Salvation Army in 1878. The organization was of gradual development. It was as the result of a revival mission in a seaport town that the work was extended beyond London. One of the converts sent out as an evangelist to reach the sailors of this place spoke of himself as "captain" to attract them, and when Mr. Booth came to inspect the mission he announced him as "General." The "General" saw the programme of "The Christian Mission of a Volunteer Army," and erasing the word "Volunteer" wrote in "Salvation." From that day the movement was known as the Salvation Army and the purpose of the Army as declared was "to destroy the fortresses of sin in the various communities." In the early days of the movement it was designed to be supplemental to the churches, but this was found impracticable, and it became separate and distinct. No one of the churches would take the General and his work under its care. In 1880 the weekly organ of the Army, appropriately called the *War Cry*, appeared in London; periodicals with the same name are published in the United States, Australia and other countries, in all in 20 languages.

It was inevitable that such a movement should develop along sociological lines and become in fact an organized social service such as all denominations are now providing as a part of their general work. (See XVI, *Social Work of the Churches*.) The converts were from classes for whom social ties had not existed, or had existed only for perverted ends. Booth took the Gospel to them and soon found that, accepting it, their social and industrial life had to be formed anew on a different pattern. Men, women and children could not continue to live in the slums and escape the evils of the slums without new social plans, better surroundings and safer influences. The work was practically for the helpless and therefore charitable institutions were necessary; hence prison-gate and rescue homes, homes for drunkards and boys and girls, farm colonies, emigration homes, nursing work, Samaritan brigades, hospitals, and other similar enterprises. "Soap, soup and salvation" was his slogan for the slums. A great impulse to his work was given by his book, *In Darkest London and the Way Out*. This attracted wide attention, making the slums known as they had never been known to the great outside world, and bringing to the author funds from those who believed in his ideas and wanted to aid him in his philanthropic plans. He did not escape criticism. Surgeon thought he was bringing re-

ligion into contempt. The results are, of course, his justification. His methods would not do at all among the moral, intelligent and thinking classes; but he endeavored to reach a most exceptional class, and he could not succeed save by exceptional plans. Among his institutions was Hadleigh agricultural colony for castaways and tramps. Its degree of success may be inferred from the statement that in the 21 years of its history it received 6,780 men, of whom 4,297 went to situations, 1,553 were discharged and 195 remained (Aug. 1, 1912).

The tributes to the dead General were of the most laudatory character. He was classed by the English daily press with such great church leaders as Wesley and Luther, and called the greatest apostle and evangelist of the age. His death was the occasion of messages of appreciation from the King of England, the Prime Minister, the Archbishop of Canterbury, and many other dignitaries of State and Church. The funeral procession drew such throngs as only that of royalty usually commands. Before his death Oxford University gave him the degree of D.C.L., and he received the freedom of the city of London.

His will left a personal estate of less than \$2,500, and passed on to his children the funds, amounting to \$26,000, which had been given to him for his support by Henry Reed. His successor as General of the Salvation Army is his son, Bramwell Booth.

COMITY, FEDERATION, AND ORGANIC UNION

Coöperation in Missionary Work.—This general subject is important enough, in view of the constant growth in sentiment in the various churches, to occupy a chapter by itself. In former issues of the *YEAR BOOK* attention has been called to the fact that comity, coöperation and Christian unity are carefully observed in the vast field of foreign missionary work by the societies representing all evangelical denominations, and that the purpose of the missionaries and native Christians seems to be to avoid intrusion into one another's fields and all appearance of competition or rivalry, and to look forward to the organization ulti-

mately of one church of Christ in each land instead of many. This plan is already bringing together in many fields those of the same denominational name, as various bodies of Methodists, Presbyterians and the like. Coöperation has gone further, however, in educational, publication, medical, industrial and other work. Presbyterians, Methodists and Disciples of Christ have united in the maintenance of educational work in Nanking, China; Methodists, Baptists, Friends and other denominations unitedly conduct educational work in West China.

There is a similar movement in home-mission work in this country,

though it is not so far advanced as that in foreign missions. Interdenominational organizations, such as those described in previous issues of the YEAR BOOK, are calling for co-operation in various lines of activity.

The Federal Council of the Churches of Christ.—A powerful general organization is the Federal Council of the Churches of Christ in America, of which Bishop E. R. Hendrix, of the Methodist Episcopal Church, South, was president, and Dr. E. B. Sanford, of New York, corresponding secretary. It began in a meeting in 1901 in Philadelphia and reached a fully organized state, with a constitution, in 1908. Its declared purposes are (1) to express the common consciousness of the various churches in matters of mutual and general interest; (2) to coördinate and correlate the work of the various denominations, so as to cover the whole ground of service and avoid duplication; (3) to inspire the formation of state, county, city or town federations of churches for mutual helpfulness; (4) to coördinate the work of such local federations so that they may work together coöperatively and effectively. The Men and Religion Forward Movement, to which reference was made in the YEAR BOOK for 1911 (p. 744) was heartily approved by the Federal Council. It seeks to unite local churches in evangelism, in developing zeal for missionary work at home and abroad, in promoting Bible study and in boys' work. It has a fully developed plan of social service, affecting not only the conditions of life in crowded centers but also in rural sections. Associated in the work of the Federal Council are official representatives of 32 evangelical denominations, including Baptist, Congregational, Lutheran, Mennonite, Methodist, Presbyterian, Protestant Episcopal, Reformed and other bodies. The second quadrennial conference of the Council met in Chicago on Dec. 3. Official delegates from 30 churches were present. Advanced ground was taken, particularly on social questions (see XVI, *Social Work of the Churches*). Prof. Shailer Matthews, Baptist, was chosen president.

A development of the year 1912 is the planning of a series of inter-

denominational meetings in the interest of home missions, under the auspices of the Council, which the home-mission societies of various denominations have organized for the consideration of questions of common concern in the prosecution of missionary work and for the creation of a more enlightened interest in the cause and in the extensive work to be done.

Church Union in Canada.—The movement for the organic union of the Congregational, Methodist and Presbyterian Churches in Canada upon a plan approved by the general bodies of the three churches which was submitted to subordinate judicatories and to the lay members of the several churches in 1911 and 1912, has reached a point beyond which it cannot advance, for the present, at least. At the Presbyterian General Assembly, held in June, 1912, the report showing that a large majority of the members and of the ministers had voted for union, was referred to a committee consisting of both advocates and opponents of union. This committee submitted unanimously a report recommending that as the minority voting against union was strong it was inadvisable to proceed further with the plan at this time. The assembly adopted the report with an expression of hope that ultimately union would be accomplished. It instructed its committee to carry on negotiations with the other two churches for a further delimitation of the territory within which new missions may be established, as well as for a fuller application of the principles of coöperation. The same committee was requested to take under consideration the modifications in the plan of union suggested by the presbyteries. The vote in the Methodist and Congregational churches was overwhelmingly for union. About 30 per cent. of the Presbyterians seem to have voted against union, one important presbytery, that of Toronto, giving a majority against it.

Plan of Union of Three Methodist Bodies.—Commissions representing respectively the Methodist Episcopal, Methodist Episcopal, South, and Methodist Protestant Churches have agreed upon the outline of a plan for

the union of these three bodies and reported it to the General Conferences of the first and last named, which met in May last. The chief legislative body of the Methodist Episcopal Church, South, meets in 1914, after which further action is possible. At the first meeting of the commissions, Nov. 30, 1910, a sub-committee of nine was appointed to formulate a plan of union. This was reported to the second meeting of the commissions held May 10-12, 1912, in Chattanooga, Tenn., and was revised and adopted. The plan in outline is as follows: (1) the three churches to be merged in one to be called the Methodist Episcopal Church in America or the Methodist Church in America; (2) the United Church to have common articles of faith, common conditions of membership, a common ritual, catechism and hymnal; (3) the governing power to be vested in one General Conference, to have power over all distinctively connectional matters, and in three or four quadrennial conferences, to have power over distinctively local affairs, the colored members to form one of the quadrennial conferences; (4) the General Conference to consist of two houses, one to be composed of delegates, clerical and lay, elected by the quadrennial conferences, the second house to consist of clerical and lay delegates elected by the annual conferences. The quadrennial conferences would choose bishops for their

own territory, the bishops to be confirmed by the first house of the General Conference. Neither of the General Conferences to which this plan was presented in May last entered upon any discussion of its merits. The action in each case was to continue the commission for another four years.

The General Conference of the Methodist Protestant Church authorized its commission on organic union with the Methodist Episcopal Church and Methodist Episcopal Church, South, to enter into negotiations with the Church of the United Brethren in Christ, which also has a commission on organic union. Commissions of these two bodies and of the Congregational churches agreed in 1907 upon a plan of union which failed of ratification. The United Brethren being Methodist in doctrine, discipline and usage, there seems more likelihood that a plan of union might be arranged with the Methodist Protestant Church. The chief difference between the two is that the former is episcopal, while the latter is non-episcopal.

Nothing new has taken place in the pending negotiations for union between the Northern Presbyterian and German Reformed Churches, the Free Methodist and Wesleyan Methodist bodies, and the Evangelical Association and the United Evangelical Church, which were separated some years ago. (See also *Protestant Episcopal*, *supra*.)

FOREIGN MISSIONS

Statistics of Protestant Missions.—Every important denomination, and indeed most of the smaller ones, have missions and missionaries in foreign fields. Some not large enough to support a society of their own, carry on work through other societies, American or European. At the close of 1911, the Protestant missionary work required for its support \$25,297,000, and it had more than 22,000 missionaries and upwards of 88,500 native preachers and helpers. There were at that date more than 2,300,000 communicants and 4,875,000 adherents. Of the annual budget of more than \$25,000,000, nearly one-half is raised by the churches of the United States and Canada.

India.—The recent census of India shows that in the decade the Christian community has increased from 2,923,341 to 3,876,196. Of this number the natives, not including Eurasians, have 3,574,000, of whom 1,394,000 are Roman Catholics and 1,442,000 Protestants. Among Protestants, Anglicans take first place with 332,000, Baptists second place, with 331,000, Lutherans are third, with 217,000, Presbyterians fourth, with 164,000, Methodists fifth, with 162,000, and Congregationalists sixth, with 134,000. It is noted that the increase in the ten years has been relatively greatest in the native-governed states. Other religious faiths have made comparatively little progress;

Christianity apparently has the most vigorous growth.

China.—The development of the Christian Church in China appears to have been very rapid since the establishment of the republic. Two thousand Christians met in Peking at the end of May and adopted a form of constitution for the "Chinese Christian Church of Peking," the purpose being to unite all Protestants in one church. The constitution gives the new body the name above mentioned, and declares its object to be to "preach, according to the Word of God, the gospel of salvation." Its creeds are the evangelical and trini-

tarian creeds of Protestantism; its government is to combine, as far as possible, the existing rites and rules of the Peking churches. Its officers are to be preachers, elders and deacons, the latter to look after the business interests of the church.

The Presbyterian Board of Foreign Missions has requests from China, since the revolution, for industrial training in its mission schools. The people desire instruction in the making of shoes, hair brushes, clothes, etc., in the American style. Methodists and other denominations are giving attention to such requests in their mission schools.

RELIGIOUS BODIES IN THE UNITED STATES IN 1911

The numbers of communicants reported by religious bodies in the United States in 1911 are given below. There are in all about 172,500 ministers and more than 221,000 churches. The gains in communicants in 1911 were well on to a million, the largest increases being reported by Roman Catholic, Baptist, and Methodist denominations. The figures given for the Roman Catholic

Church are those reported officially by the church authorities for Catholic population, with 15 per cent. deducted for baptized children not confirmed; those for the Eastern Orthodox churches include children, but children are communicants according to their rule; those for the Mormons (Latter-Day Saints) also include children, who are not communicants in that body.

Communicants		Communicants	
Adventists, 6 bodies	95,808	German Evangelical Synod...	253,890
Bahais	1,280	German Evangelical Protestant	34,704
Baptists, 15 bodies	5,775,358	Jewish Congregations	*143,000
Brethren, Dunkard, 4 bodies.	123,677	Latter-Day Saints, 2 bodies..	400,650
Brethren, Plymouth, 4 bodies.	10,566	Lutherans, 23 bodies	2,289,897
Brethren, River, 3 bodies	4,847	Scandinavian Evangelical, 3	
Buddhists, 2 bodies	3,165	bodies	68,500
Catholic Apostolic, 2 bodies.	4,927	Mennonites, 12 bodies	55,007
Catholic, Roman and Polish,		Methodists, 17 bodies	6,819,660
2 bodies	12,778,707	Moravians, 2 bodies	18,939
Christadelphians	1,412	Non-Sectarian Bible Faith...	6,396
Christians	88,304	Pentecostal, 2 bodies	21,921
Christian Catholic (Dowle)..	5,865	Presbyterians, 12 bodies.....	1,944,181
Christian Science	85,096	Protestant Episcopal	947,320
Christian Union	13,905	Reformed, 4 bodies	451,938
Churches of God (Winbren-		Reformed Catholic	3,000
ner)	41,475	Reformed Episcopal	9,610
Church of the Living God		Salvation Army, 2 bodies....	26,724
(Colored), 3 bodies	4,286	Schwenkfelders	850
Church of the New Jerusalem,		Social Brethren	1,262
2 bodies	9,390	Society of Ethical Culture ..	2,450
Communitistic Societies, 2 bodies	2,272	Spiritualists	200,000
Congregationalists	738,761	Theosophists	3,092
Disciples of Christ, 2 bodies.	1,533,962	Unitarians	70,542
Eastern Orthodox, 7 bodies..	424,000	United Brethren, 2 bodies...	311,834
Evangelical Association, 2		Universalists	53,048
bodies	183,574	Independent congregations...	48,673
Faith Associations, 9 bodies..	9,572		
Free Christian Zion Church			
(Colored)	1,835		
Friends, 4 bodies	122,796		
Friends of the Temple	376		

Total36,252,304

* Estimate, includes only heads of families.

JUDAISM

A. S. ISAACS

Colonization.—The latest published report of the Ica, or the Jewish Colonization Society, which inherited the greater part of Baron de Hirsch's millions, realizes the dream of its founder in bringing back to the soil thousands of Jewish families from Polish and Russian ghettos. In the Argentine 3,619 families, comprising 20,038 souls, are tilling the soil, possessing a million and a quarter acres of arable land, nearly half of which is under cultivation. In Brazil only an experimental beginning has been made. In the Argentine, colonists have 54 schools, with 172 teachers and 3,639 pupils, mutual-benefit societies, libraries and clubs, all the result of but nine years' effort. In the United States the Ica gave \$256,000 in loans to 3,000 Jewish farmers, representing 3,000 souls, while in Canada it settled or assisted 828 farmers who own an aggregate of over 100,000 acres. During 1911 one of its New York agencies took 3,950 persons from the congested districts and distributed them over 262 towns in the United States and Canada. The Jewish farmers support a Yiddish monthly, with 2,600 paying subscribers.

Jewish Farmers in the United States.—The movement back to the soil in the United States, first begun under the auspices of the Baron de Hirsch Fund in the early eighties, has developed in many directions. Besides the pioneer colonies in South Jersey, Jewish farmers are to be found in New York, Connecticut, Massachusetts, Pennsylvania, Ohio, Michigan, and North Dakota. It is estimated by the Jewish Agricultural and Industrial Aid Society that it has come in touch with 3,718 Jewish farming families, comprising 18,590 souls, who have 3,438 farms, with an acreage of 437,268, a land value of \$22,194,335, and equipment value of \$4,166,329. These figures, according to the U. S. Immigration Commission, represent only about 75 per cent. of the Jewish farmers in the United States. The latest settlements are in the Sacramento Valley, Cal., on the

Tevier River, Utah, and near Houston, Texas.

Farm Schools.—The first farm school, for secondary education in agriculture, is the Baron de Hirsch Agricultural School, at Woodbine, N. J. Between 1894 and 1912 it sent out 891 students, of whom 429 completed the course and were graduated. Some of the graduates are teachers in agricultural schools, and serve in the U. S. Department of Agriculture and in similar departments of various states. Another farm school was founded a few years later by Rev. Dr. Joseph Krauskoff as the National Farm School at Doylestown, Pa. It has grown, since 1897, to 400 acres, with 17 buildings, and is unsectarian. Since 1901 it has graduated 107 students. In 1912 its income was \$42,546.66, expenses \$44,206.06. Its students numbered 101. Its equipment is valued at \$250,000. Some of its graduates are experts in various lines of agriculture, as instructors, and as managers of plantations in the South and fruit farms in the West.

The Ritual Accusation.—During the early part of this year the mediæval legend of the blood accusation arose again in Russia, as well as in Bulgaria, Moravia, and Bohemia. In Russia its consequences were more serious. Late in 1911, 813 Russian rabbis had protested against the libel without any apparent effect. On May 6 the most prominent church and political dignitaries of Great Britain, leaders in art, science, and literature, joined in a protest against the ritual accusation.

Progress in Palestine.—Figures published in October tell of decided growth in Palestine, with about 90,000 Jewish settlers on the soil, of whom about half are in Jerusalem. They own 40 villages and 100,000 acres of land, three-fourths of which is under cultivation. Of these, 15 colonies are in Judea, eight in Samaria, 16 in Galilee, and one in the trans-Jordan country. The Paris Alliance Israelite and the Berlin Hilfsverein provide schools and teachers for 5,000 children, while German and

English societies maintain respectively special schools of rabbinical instruction and for girls. The Bezalel Arts and Crafts Schools at Jerusalem, the Herzl Memorial High School at Jaffa, and the Polytechnic School now building at Haifa, must also be mentioned. The agricultural and technical schools of the Alliance at Jaffa and at Jerusalem were the pioneer institutions of their kind in the East.

The Zionists are particularly active in colonizing and other work in Palestine, as these organizations show: (1) the Jewish Colonial Bank of London with its offshoot, the Anglo-Palestine Company, which has branches in Beirut, Haifa, Hebron, Jaffa, Jerusalem and Safed; this institution is principally engaged in making loans at very low rates of interest to Jewish agriculturists and traders; (2) the managing board of the "Jewish National Fund," which has planted extensive olive orchards and purchases land which is not resold, but divided into allotments and leased to settlers or otherwise exploited for the benefit of the fund; (3) the Palestine Land Development Company, which has acquired large properties on the shores of the Sea of Galilee; (4) the Ereto Israel Colonization Company of Cologne; (5) the Berlin Jewish Women's Federation of Cologne, which is employed in building workmen's houses.

Germany.—That the Jews of Germany enjoy wide opportunities for civic advancement is proved by the fact that there are 16 Jewish members of the new Reichstag, representing different political parties, the Social Democrat being in the majority. Some idea of the progress made in Berlin alone is furnished by the latest budget of the Jewish community. Its income was four million marks, nearly a quarter of which is spent for charities of every kind. There are 40 institutions, educational and religious; for synagogue purposes over half a million is expended. Fifteen religious schools are maintained, with secondary schools, teachers' seminary, rabbinical college, etc. Its members number 38,000. The orthodox section has its own budget—about a quarter a million.

Jewish Charities in Russia.—The leading Hebrew daily in Russia has just made an inquiry into the condition of Russia's Jewish charities, and the appalling picture of poverty is relieved by the variety and numbers of benevolent agencies in its relief. A hundred and thirty cities and towns in 33 governments replied. Without any exaggeration, between 40 and 45 per cent. of the Jewish population are recipients of charity. Only 12 of the towns that responded have no benevolent societies—the rest have an average of four to each place. The relief societies cover all kinds of relief; medical aid heads the list, then comes bread distribution, supporting the poor, marrying off poor girls, loan associations, maternity relief, dressing the poor, supporting wayward women, supplying fuel, hospitals, etc. The sources of income are flower days, concerts, balls, etc., and in the smaller places house-to-house collections. Former residents who have emigrated to the western world send help from time to time.

The Liberal Movement.—In the interest of the liberal movement in Judaism, Israel Abrahams, reader in Rabbinic at Cambridge University, England, lectured in the United States the latter part of the year under the auspices of the Adolph Lewisohn Fund, at the initiative of Rev. Dr. Wise, of the Free Synagogue, New York. An eastern council of liberal or reform rabbis was organized in New York in October, with a membership of about 40, to promote progressive Judaism and oppose any backward tendencies, owing to the large influx of immigrants, who now greatly outnumber the liberal element, particularly in New York and the East. In September, 27 rabbis met in Frankfurt, Germany, in the interests of liberal Judaism. The first two paragraphs of their programme read as follows:

Liberal Judaism recognizes the existence of the Jewish religion in its eternal truth and moral commands and maxims which are destined to become the universal religion.

The eternal truths and moral commands of the Jewish religion which are recognized by all sections of Jewry and in all epochs are:

(1) The teaching of the one spiritual and sacred God, the God of love and justice.

(2) The teaching of the divine likeness of man and the immortality of his soul, of his power to moral freedom, and of his being destined to develop and to attain higher moral and spiritual perfection.

(3) The teaching that all men are children of God, and of the destiny of mankind to come nearer to the Messianic ideal of peace by truth, justice and love.

Honors of the Year.—In Great Britain, Sir Rufus Isaacs was admitted to the cabinet, and baronetcies conferred on Sigismund M. Neumann, Lionel Phillips, George Albu, Stuart M. Samuel, M. P., and Sir David Sassoon; Sir Philip Sassoon was elected to Parliament. In France, M. G. Lippman was elected president of the French Academy of Sciences for 1912; M. L. L. Klotz reappointed Minister of Finance in the new French cabinet; and Ferdinand David appointed to the ministry of commerce. In Germany, Judge Wolfsthal, of Ratisbon, was made Attorney General at Frankenthal; Dr. Harburger, of Munich University, was made president of the Senate of the Supreme Court; and Max Liebermann elected senator of the Academy. Leopold Sachs, of Vienna, received a seat in the Austrian House of Lords. The Hungarian Government (Jan. 26) created two chairs for the Talmud at Budapest University. Portugal (Feb. 23) offered land in Angola, Portuguese West Africa, for Jewish settlement, which is being considered by the Zionists. In the United States, Nathan Barnert was appointed to the

Finance Commission of Paterson, N. J. (February); Henry M. Cohen elected judge in Tampa, Fla. (June); and Julius M. Mayer (Feb. 26) appointed U. S. judge for the Southern District, New York. Arthur Myers was called to the New Zealand cabinet. Oscar S. Straus was an unsuccessful candidate for governor of New York on the Progressive ticket.

Gifts and Bequests.—J. H. Schiff has given 15,000 volumes in Hebraic literature to the Library of Congress, and founded a German professorship at Cornell by gift of \$100,000. Baron Gustav de Rothschild's will (Feb. 16) set aside a million francs for improvement of the working classes in Paris. James Simon, of Berlin, has given 100,000 marks to Haifa Technical Institute. Alex. von Pflaum has bequeathed 500,000 marks for the poor of Stuttgart. Wissotzky Bros., of Odessa, sent 100,000 roubles to Haifa Technical Institute. The Barons de Rothschild, of Vienna (Feb. 16), gave a million crowns for the benefit of working classes, and two hundred thousand crowns for a surgical institute; Baron Albert de Rothschild (June 28) left \$2,000,000 for the poor of Vienna. Baron Ritter von Gutmann gave three million crowns for a children's hospital in Vienna. Sir David Sassoon gives \$250,000 to promote agriculture in India. Mrs. Caroline W. Neustadter, of New York, left a million and a half to charity. Julius Rosenwald, of Chicago, gave a million for scientific farming and \$700,000 to Jewish and non-Jewish charities. Nathan Straus, of New York, gave \$100,000 to Jewish charity in Jerusalem.

XXXII. ART, ARCHÆOLOGY, MUSIC, AND DRAMA

PAINTING AND SCULPTURE

DAVID LLOYD

French Society of Painters and Sculptors Loan Exhibition.—A review of the year's work in painting and sculpture extending over the calendar year runs from the crest of one season to the crest of the next, so that the summary of the period must be somewhat arbitrarily delimited. Among unusual items in the period just passed, first mention should probably rest on the loan exhibition of works by members of the French Society of Painters and Sculptors (the *Société Nouvelle*) which was first viewed in Buffalo, N. Y., at the Albright Art Gallery and at the beginning of the year moved on to Chicago, St. Louis and Boston. Some of the exhibits, not before shown in Pittsburgh, contributed to the importance of the international exhibition at the Carnegie Institute there (April 25 to June 30). The appearance of these foreign works, which included examples of the art of Aman-Jean, Blanche, Besnard, Carrière, La Touche, Le Sidanier, Ménard, Henri Martin, Rodin, Raffaelli was, to be sure, an event in the American art season only, and in no sense an element in the year's native production. Yet it was accompanied by an agitation, which, ephemeral in itself, promised continued results.

American Society of Painters and Sculptors.—The French society, never before an exhibitor outside of Paris, had been won to the experiment of its traveling exhibition by the personal initiative of Miss Cornelia B. Sage, successor of the late Dr. Kunz as director of the Buffalo gallery, and the itinerary omitted New York. From this fact the critics of the

National Academy of Design derived no small advantage; and before the discussion had lost public attention a plan, bruited at various times since the recession of the late Society of American Artists, was definitely formulated in the public announcement of a new independent body. The style of the new organization, similar to that of the French visitor, was to be the American Society of Painters and Sculptors. Alden Weir, a member of the "Ten American Painters," headed the list of charter members as president, but shortly afterward withdrew and was succeeded by Arthur B. Davies. The other members included Gutzon Borglum, Walt Kuhn, Elmer MacRae, J. Mowbray Clarke, Jerome Myers, Henry Fitch Taylor, Karl Anderson, George Bellows, Leon Dabo, Jo Davidson, Guy du Bois, Putnam Brinley, D. Nankivell, Robert Henri, Jonas Lie, Ernest Lawson, William Glackens, Bruce Porter, John Sloan, Edward Kramer, Maurice Prendergast, and Allen Tucker.

This nucleus, by the way, includes a number of the exhibitors at the Madison Art Gallery in New York City, an experimental venture under the direction of Mr. Taylor, with a programme of liberal management and a hospitality not for profit, but without sufficient support in public interest to outlive the season's close. Of a cognate inspiration, too, was the plan of the art committee of the MacDowell Club of New York, whose gallery has been devoted to a series of exhibitions without jury, of self-constituted groups of eight or ten artists. The displays, certainly of unequal interest, have none the less

justified the experiment, resumed for a second season, without, however, bringing forth work calculated to disturb the equilibrium of the previously existing machinery for public views.

The new society perfected arrangements for an exhibition without jury in February, 1913, to include, after the fashion of recent Salons, a variety of arts in addition to painting and sculpture, and also to draw upon foreign countries, with the special view of representing recent developments, such as the cubists, post-impressionists, futurists, and other groups scarcely known here. Following the impatience at the quality of the Academy's displays, held to be too parochial in character to justify its title of National, the new society under the style American offers an international programme.

National Academy of Design.—The National Academy meanwhile has continued its usual Spring (March 9 to April 14) and Winter shows (Dec. 14 to Jan. 12), held in the inadequate galleries of the American Fine Arts Association. The incorporation of the National Academy Association, embracing the combined strength of the Academy and various other societies, has brought the prospect of adequate gallery space appreciably nearer by greatly enlarging the membership marshalled behind the need of a new building. The Academy itself has appropriated to the purpose on its books the income from an aggregate fund of about \$200,000. The question as to site, which through the course of several seasons past has involved an unpopular attempt to secure permission to build in one or another of the city's parks, remains still undetermined. The choice of a site on the Academy's property on the heights near the Cathedral of St. John the Divine has been seriously urged. The Academy and its partisans feel that its shortcomings are properly chargeable to the mechanical limitations of its present gallery space, and the financial limitations imposed on its own funds by trust. The opposing sentiment apparently regards the delay as too indefinite or the trouble as less eradicable. For the present the

immediate result is to add to the normal activity.

Exhibition of Scandinavian Art.—A second unusual feature of the season was a second exhibition of foreign art, a selected group of works by Scandinavian, Norwegian, and Danish artists, assembled under the patronage of the three kingdoms and under the management of the American Scandinavian Society, John A. Gade, president. This exhibition, comprising upwards of 150 works, was opened in New York early in December and was to be seen later in Buffalo, Toledo, Chicago, and Boston. In addition the biennial exhibition of the Corcoran Art Gallery in Washington, D. C., falling in this year, opened at the capital December 17 and added to the record its conservatively chosen collection of native works.

Minor Societies.—Among the lesser organizations a new one entered the field, the American Society of Portrait Painters. The initiators of the project, Earl Stetson Crawford, DeWitt M. Lockman, and C. Montgomery Roosevelt, enlisted a dozen portrait painters of standing and merit as charter members without, however, making a particularly notable showing of strength in their first display. Among the miniaturists the American Society's exhibition was one of the best in recent years, brought forth a generous array, and on the whole maintained well a standard of serious proficiency with an interest in the freer flowing of colors. The group of painters who have banded together as the Pastellists made a welcome demonstration, in the work of several members shown at their annual exhibition, of the resources offered by the medium for color effects of solidity and vigorous handling, which carry the pastel beyond its service of the draughtsman to a deliberate rivalry with oils. Something of the same temper is obvious at the moment in the case of the painter with the water-color brush. As the exhibitions of the American Water Color Society, the New York and Philadelphia clubs, and other groups, testify, no preaching of the virtues of limpidity, crispness and the unadulterated wash

will persuade the painter to stay his brush from other essays. Any result which he can successfully accomplish in his medium is to his mind appropriate. Accordingly, though without question a good deal of the work shown in these displays lacks distinction, there is a freer attitude toward experiment. This opens the door, also, to the cultivation of definite schemes in manner and the amusing note of reasonable novelty, for an example of which might be instanced the recent work of D. B. Milne. Yet the outstanding item in water colors for the year was a group of paintings without a touch of the bizarre or any straining of method, the collection of sketches in Switzerland, Venice, Genoa, Florence, Corfu and Carrara by John Singer Sargent, acquired by the Boston Museum. This splendidly entertaining work of a master hand set at rest for itself at any rate all question of medium and result.

Mural decoration of importance was done for the Federal Building in Cleveland, O., the Hudson County Court House in Jersey City, and the Wisconsin State Capitol at Madison. A new note in the decoration of public buildings was introduced in the Wisconsin capitol by the commissions assigned to Hugo Ballin. A younger recruit to the group which has been engaged for years in embellishing the interiors of state houses, court houses and capitols of the Atlantic Seaboard, the Middle West and the West, Mr. Ballin brings a new personal quality, particularly in his habitual vigorous accent upon luminous and brilliant color. Mr. Blashfield's contributions to the walls of the same building include a recent painting of much distinction and matured grace in which the perilous element of the national stars and stripes is successfully central. C. Y. Turner, whose dignified interpretations of military episodes from the Revolution were completed for the Hudson County Court House, has accepted a post at Baltimore, the scene of some of his earlier mural successes, as director of the Maryland Institute.

To the ranks of the mural painters the tragedy of the year has fallen

in the loss of Francis Davis Millet in the *Titanic* disaster, April 14. Besides his work in mural painting, which he has left us in the Cleveland Post Office and the Trust Building, the Baltimore Court House, the Governor's Room of the Minnesota State Capitol, the Newark and Jersey City court houses, and his earlier series of genre pictures of eighteenth-century England and old Rome, Mr. Millet was an invaluable man in American art affairs. Director of decoration for the Chicago Exposition of 1893, a landmark in our artistic progress, he gave freely of his time in organizing and inspiring coöperative effort. He died the busy chief administrator of the reorganized American Academy in Rome, one of the most cherished of his unselfish concerns. To Mr. Millet's place in the federal Commission of Fine Arts President Taft appointed Mr. Blashfield.

Sculpture.—In sculpture the year has not been unusually important, though several isolated works demand notice. Among these the Columbus memorial by Lorado Taft for the plaza of the Union Station in Washington, D. C., is notably simple and dignified in its proportions. The sculptor has supplied a standing figure of the discoverer, set before a shaft of 45 feet surmounted by a globe with eagle supports and flanked by figures of the old and new worlds. The theme is less original in treatment than the same sculptor's fountain of the Great Lakes at Chicago. By Daniel Chester French, the Lincoln memorial adds another worthy presentment of the war President, this time at Lincoln, Neb. Mr. French's figure for the Marshall Field Memorial was shown at the Architectural League exhibition (Jan. 28 to Feb. 17), where there was also seen work by Herbert Adams, Charles Keck, Augustus Lukeman, Karl Bitter, Evelyn B. Longman, and others. The winter show of the Academy emphasized sculpture by assembling in one gallery 166 works of 81 sculptors. A new note of distinguished energy was contributed by Mahonri Young. The death of the seriously accomplished modeller, J. Scott Hartley in the week before the exhibition was a national loss. Bela

Pratt's reliefs for the Boston Opera House have enlivened an austere front. William Ordway Partridge completed a portrait memorial of Horace Greeley for Chappaqua. The collections of Victor Brenner's medals and plaques made one of the most attractive one-man shows of the season. The animal figures of F. G. R. Roth, Eli Harvey, Anna V. Hyatt and others continue sharply characterized with an emphasis on movement. Bessie Potter Vonnob's figurines in the mode of the day, and Abastenia St. Leger Eberle's figures from East Side life, are true transcripts of contemporary civilization and it is to be hoped will point the way to a more general cultivation of a field which, except in its Western aspects, our sculptors on the whole are too much inclined to neglect.

Two traveling exhibitions were arranged by the National Sculpture Society under the auspices of the American Federation of Arts, one of small bronzes and the other of medals, plaques and reliefs. Sculpture by Janet Scudder, Bela L. Pratt, Anna Coleman Ladd and Isidore Konti was exhibited in the Public Garden in Boston during the summer.

Museums.—Among the museums, the shipment of the collections of J. Pierpont Morgan was in many ways unquestionably the most important event of the year. The shipments from Mr. Morgan's London house, from Paris, and from the Victoria and Albert Museum, to the Metropolitan Museum in New York City, began in February and continued into December. The voting of an expected appropriation of \$750,000 for adding a new south wing to the Museum was delayed by the Board of Estimate so that the Morgan collections were being received by the Metropolitan as depository only and remain stored and packed. The Toledo Museum opened its new building Jan. 17. One-half of the cost had been raised by popular subscription, and the other half defrayed by Edward Drummond Libbey, president of the Toledo Art Association. The Museum, which is under the direction of George W. Stevens, entered into its permanent home in its tenth year. Seattle is working toward the

building of a museum with an association of some 1,200 members; Minneapolis is to have a new building. At Muskegon, Mich., the Hackley Art Gallery was opened June 21. Rochester, N. Y., is to have a new gallery on the University campus as memorial to J. G. Averell. A new body, the Art Association of Newport, held its first exhibition there in July, in the studio of the late William Morris Hunt. The Atlanta Art Association introduced lectures on various historic schools of painting as a feature of the programme of a local moving-picture theatre. A Museum of French Art was projected in New York for popularizing French art in this country on lines not unlike those followed for literature by the Alliance Française.

The American Federation of Arts held its convention in Washington, D. C., May 9-11. Fifteen organizations were reported as having affiliated during the Federation's third year. The total number of chapters was 130. Thirteen exhibitions were sent out on circuit to 43 cities in the South, North and Middle West. In 40 cities and towns remote from art centers stereopticon lectures have been delivered. For the season 1912-1913, besides the sculpture exhibitions already mentioned, three exhibitions of oil paintings were arranged, two of water colors, one each of the following: original works by American illustrators; architectural design and allied arts; photographs of mural paintings, with original studies; photographs of sculpture; and several others. The demand for these exhibitions, which are sent without charge to chapters, is growing, particularly in the Middle West. The Federation's magazine, *Art and Progress*, has successfully entered its fourth year. In the death of Mr. Millet the Federation lost its secretary. A memorial meeting was held in the auditorium of the National Museum on the evening of May 10. The work the Federation is doing in serving an extended and scattered public deserves full appreciation. It organizes undirected interest in art, fosters the growth of organizations, breaks the ground, as it were, for the museums of the future.

ARCHITECTURE

H. VAN BUREN MAGONIGLE

The Architecture of Commercial Structures.—It would seem from a survey of the notable buildings of the United States that for public and semi-public structures the architects of the country are inclined to the use of Classic or Renaissance forms. Particularly in New York, however, in this year of grace, 1912, there is a very distinct drift toward the Gothic, either Italian or French, for commercial structures such as office and loft buildings. Mr. Gilbert's beautiful West Street Building is probably responsible for this. But it is interesting to note that of the three most important buildings completed or to be completed this year, the New York Post Office is Roman Classic; of the two others, the tallest buildings in the world, the Bankers' Trust is Classic with Greek detail and the Woolworth Building is Gothic. It is too soon to venture upon prediction as to which will develop most strongly. On the whole there are indications that a new architecture is being gradually evolved for commercial buildings partaking in detail of a fusion of the external characteristics of many styles, but in structure healthily based upon legitimate commercial demands for light, air and convenience.

Repeal of the Tarsney Act.—Since 1893 the Act of Congress under which government buildings over a certain cost have been awarded by competition among the architects of the country has been in successful operation. The vast quantity of work handled by the office of the Supervising Architect of the Treasury Department makes it impossible for that official to exercise more than a general supervision over the work of his staff. The actual design therefore falls into the hands of more or less competent young men who do not, as a rule, possess the training and certainly not the experience in executed work of the established practitioners of the country.

The last Congress, of a political complexion different from several preceding it, instituted a number of

investigations into expenditures in the various departments of the Government, among them those in the Treasury Department; the committee in charge of this particular investigation fell foul of the Supervising Architect's office and incidentally of the Tarsney Act. A statement submitted to them by the Treasury Department appeared to show that the cost of architect's services as performed by the office of the Supervising Architect was but 2.78 per cent., as against six per cent. paid to outside architects. This statement was subjected to a searching analysis by the committee on Government architecture of the American Institute of Architects and shown to be misleading. When the current expenses of the Government office are properly apportioned to the work actually current, it was proved that the cost to Government of its own office is over 11.5 per cent., instead of 2.78 per cent., or, allowing one per cent. for the cost of administration on work done by outside architects added to the fee of six per cent. paid them, over 4.5 per cent. more than the cost of having its work done by practicing architects.

In spite of this and in spite of the recorded testimony of the Supervising Architect in support of the Tarsney Act, a repealing act was included as a rider on the Sundry Civil Appropriations bill, failed of removal in conference and became law by the signature of President Taft; a piece of legislation inimical to the best interests of the country, whether viewed from an æsthetic or an economical standpoint.

Education.—Architectural education throughout the country shows a healthy and steady growth. The schools, colleges and universities having courses in architecture are attracting better and stronger men to their teaching staffs and the department at Columbia University is being organized on lines that promise well. The Society of Beaux-Arts Architects at the close of their year 1911-12 had 831 registered students

on their lists; owing to the fact that the Society strictly enforced its regulations as to the registration of students, this number is some 300 less than the enrollment of the previous year, but represents an increase of 231 properly registered students. Fifty-nine ateliers throughout the United States and Canada and 16 schools or colleges send their work to the Society for competitive judgment. A direct application for the programmes of competition has been received from the Philippine Islands. In addition to the regular competitive work, it is planned in the year 1912-13 to give free lectures on pertinent subjects.

The Society, coöperating with the National Sculpture Society, has instituted a course in architectural sculpture, including both ornament and the figure, for the special benefit of apprentices and journeymen in the trade of ornamental sculpture, the apprentice system in that trade being defective. There are two classes receiving instruction; in the first men already skilled in ornament are taught to model the human figure and to invent compositions in figure and ornament; in the second beginners are taught the trade of ornamental sculpture. The instruction is given by artist sculptors of high standing who each give their time for a month so that the students receive the benefit of the influence of several artists each season. Although the course has been available to architectural draughtsmen few have taken advantage of it; but it has been proposed to interest them in this work during the current year.

American Academy in Rome.—The consolidation of the Academy and the School of Classical Studies took effect during the year. Jesse Benedict Carter has been chosen as the general executive and will be known as the director of the American Academy in Rome. Over each school will be its own head, and while the director will have general charge each school will have great freedom in its own work. What is now called the American Academy in Rome will become the School of Fine Arts, with the present director of the Academy, Mr. Stevens, in charge. Work was

started this year on buildings to house the Academy in the Villa Aurelia on the Janiculum. The alumni association has appointed an advisory council to confer with the trustees of the Academy from time to time and suggest and assist in all matters pertaining to the work of the students.

Allied Arts.—The Committee on Allied Arts of the American Institute of Architects has been engaged during 1912 upon an inquiry into the relations that exist between the architect, the mural painter and the sculptor, and will report to the Institute at its annual convention this year that the present unsatisfactory conditions are due to the lack of an early education that would assure a sympathetic and intelligent coöperation between the practitioners of the three arts.

It will recommend to the Institute that, since in the American Academy in Rome where students of architecture, painting and sculpture live and work together for three years, an educational agency exists at present best adapted for the coöperative education so sadly needed, the Institute establish an annual prize for a collaborative work by student architect, painter and sculptor in the Academy, and that the Institute should foster, to the full extent of its power, the multiplication of agencies for collaborative training in this country.

This apparently simple report contains the germ of a great artistic movement. It is undeniable that the highly specialized training of the architect, painter and sculptor keeps them apart in knowledge of each other's work and point of view during the very years when they should be learning to lean upon each other; with the result that the architect knows practically nothing of the technics of painting and sculpture, the painter and sculptor are equally ignorant of the other arts, and intelligent coöperation is difficult in the extreme.

Missouri State Capitol Competition.—The code of competition of the American Institute of Architects has notably justified its existence during this year. The Commission of the Missouri State Capitol, composed of

men of the highest probity and integrity, but without experience in the conduct of competitions, endeavored to inaugurate one for their building. The programme was not essentially worse or better than the average programme before the code was established and the proper principles of competitions laid down; but all members of the Institute declined to compete under its terms; and through the diplomatic office of the committee on competitions, the commission revised its programme with their assistance, and a double competition was held, the preliminary stage participated in by 69 architects; the professional records and standing of the competitors were taken into consideration equally with the merits of the designs submitted; this resulted in the selection of ten of the best firms and individuals in the country for the second competition. The design of Messrs. Tracy & Swartwout was selected and gives promise of being, when executed, the most distinguished state capitol in the United States.

The Federal Capital of Australia.

—The federal authorities of Australia held an international competition for a plan for the new federal capital at Yass-Canberra, an inland site about midway between Sydney and Melbourne. For the first time since Washington and L'Enfant laid down the lines of the capital of the United States, a city of similar character is to be built on virgin soil. Like the city of Washington it will lie within a federal reservation corresponding to the District of Columbia; and the same wise considerations that governed the selection of a site retired from the large centers of population, commerce and manufactures seem to have been observed in the choice of Yass-Canberra. The city limits enclose a square of about 16 sq. miles, admirably diversified in surface, well wooded over certain areas suitable for park purposes, with ample gently rolling open spaces for the city proper. The Molonglo, a sluggish creek, runs through the site and is to be dammed to create an ornamental water in the midst of the city. The competition was well conducted and 137 designs were sub-

mitted from all over the world. The jury of award consisting of three members divided on their report, the majority awarding prizes and honorable mentions as follows:

First prize: Walter Burley Griffin, Chicago, U. S. A.

Second prize: Eliel Saarinen, Helsingfors, Finland.

Third prize: D. Alf. Agache, Paris, France.

First honorable mention: H. Van Buren Magonigle, New York, U. S. A.

Second honorable mention: Schanfelberg, Rees, and Gummer, London, England.

The minority awards were:

Messrs. Griffiths, Coulter and Caswell, Sydney.

Arthur C. Comey, Cambridge, Mass., U. S. A.

Nils Gellerstedt, Stockholm, Sweden.

The Panama-Pacific Exposition.

—Since the World's Fair at Chicago a number of international expositions have been held in this country of varying merit from an architectural point of view. In France the architects approach the design of their Fair Buildings in a spirit totally different from ours; their theory is that the buildings being temporary, the exposition ephemeral, the architecture may or should partake of its ephemeral character, be gay and fanciful, even extravagant. Here, however, we regard the temporary envelope as a vehicle for the education, in serious architectural design, of the great masses of people who visit these shows; it is certain that the Chicago Fair effected a revolution in architectural taste. The Panama-Pacific Exposition is being conducted, so far as its artistic side is concerned, very much like the World's Fair of 1903-4. An architectural commission composed of Willis Polk as chairman, McKim, Mead & White, Thomas Hastings, Henry Bacon, W. B. Faville, Louis C. Mulgardt, Robert Farquhar, George Kelham and Clarence R. Ward, confer on all important questions of plan, scale and design, latitude within these limits being accorded to the individual designers. Jules Guerin is director of color, Karl Bitter, director of sculpture, and A. Stirling Calder, acting

director of sculpture. The buildings are not isolated as in other expositions, but directly connected with each other, surrounding and enclosing a series of vast courts; the design of all the façades facing on each court is entrusted to one of the members of the commission.

LANDSCAPE ARCHITECTURE

JOHN NOLEN

Public Parks.—Landscape architecture is coming into increased prominence in the United States annually. For five or six decades, it has been the art employed by municipal authorities, in various parts of the country, in the laying out and maintenance of city parks, but until recently the results have not been especially significant. Now, however, these public works have become a notable part of the art achievement of the country. City parks in the United States now comprise nearly a hundred thousand acres. The cost for maintenance per annum is estimated at nearly four million dollars.

Some of the cities in which important park developments have taken place during the year are the following: Minneapolis (chain of lakes); Indianapolis; Salt Lake City; Grand Rapids, Mich.; Detroit; Brooklyn (improvements in existing parks); Fort Worth, Tex.; Denver (system of mountain parks); Sacramento (improvement of Del Paso Park, a tract of 800 acres); Los Angeles (a park system including Griffith Park, a natural tract of over 3,000 acres, said to be the largest municipal park in the world); Scranton (system of parks including a nearby mountain); Lock Haven, Penn.; Boston (notably the new Zoological Garden in Franklin Park, the Aquarium in Marine Park, and the beautiful bandstand in Boston Common, all purchased with the income from the special Parkman fund); Chattanooga (a general park system including the new Warner Park as a recreation center); San José (Alum Rock Park); Kansas City (large river park); Tacoma (Port Defiance Park); Boston Metropolitan Parks (\$1,000,000 "Missing Link" appropriation). (For details of park progress during the year, see *Park and Cemetery*, Chicago, and *Landscape Architecture*, New York.)

The Second Conference on National

Parks, called by Walter L. Fisher, Secretary of the Interior, was held in the Yosemite in October. John Muir, one of those in attendance, urged the necessity for a Bureau of National Parks, particularly in order that more attention might be given to the laying out of roads and paths in the parks, the erection of buildings, etc., under the advice of competent landscape architects. The American Civic Association has issued a bulletin with addresses on the subject by President Taft, the Secretary of the Interior and J. Horace McFarland, president of the American Civic Association. In a special message to Congress, President Taft said:

I earnestly recommend the establishment of a Bureau of National Parks. Such legislation is essential to the proper management of those wondrous manifestations of nature, so startling and so beautiful that everyone recognizes the obligations of the Government to preserve them for the edification and recreation of the people.

Important acquisitions of land for state parks have been made by Massachusetts, New York, Wisconsin, Michigan and California, and more recently by Maine and New Hampshire. Some of these have been developed in accordance with the plans of landscape architects.

City Planning.—Some of the more important city-planning events of the year are as follows: Preparation of general plans by landscape architects and architects for Hartford, Conn.; Newark, N. J.; Houston, Tex.; Scranton, Lock Haven and Erie, Penn.; Schenectady, N. Y.; Detroit, Mich.; Brooklyn, N. Y., and Keokuk, Iowa; the appointment of city-planning commissions or civic committees by Calgary, Winnipeg, Edmonton and Saskatoon, Canada; the execution of certain features of the Burnham plan for Chicago as

approved. The competition for a plan for the new capital city of Australia was won by Walter B. Griffin, a landscape architect of Chicago (see *Architecture, supra*).

The National Conference on City Planning held its fourth annual meeting during the year at Boston. It brought together a larger group than ever before and there was evidence of a decided widening of interest and more thorough study of the problems involved in the convenient and artistic development of modern cities. (See also VII, *Municipal Government*.)

Garden Suburbs.—A special phase of landscape architecture is the development of garden cities or garden suburbs. A fine example of this movement is now being successfully worked out at Forest Hills Gardens, Long Island, New York. The work is being done under the direction of the Sage Foundation Homes Co. In its business purpose, Forest Hills Gardens does not differ materially from other Long Island real-estate enterprises. It is not a charity. Notwithstanding this emphasis on the business side of the enterprise, a distinct educational purpose exists. It is a demonstration of the value of more scientific and more artistic methods of handling, distributing and developing suburban land. Other illustrations are the community design for the property of the Boston Dwelling House Co. at Forest Hills, Mass., the suburban development of a thousand acres at Myers Park, Charlotte,

N. C., and the opening of the so-called "Country Club District" of Kansas City, Mo. These land subdivisions show the basic principles of landscape architecture—the laying out of ground for use with due regard to the appropriate beauty of its appearance. It has been said that every 15 years 500,000 acres are abstracted from the rural domain in agricultural England for new houses, railways, factories and work-shops. The area in the United States must be much greater. It is therefore important to apply right methods in the laying out and development of this immense tract, if outdoor art is to be advanced.

Vocational Advance.—The most certain indication of progress in landscape architecture during the year is the increase in the number of qualified men adopting it as a life career and the raising of the standard of professional equipment. The elaborate and systematic course in landscape architecture now conducted in the graduate school of Harvard University, the regular courses in the same field offered by Cornell University, Columbia University and the agricultural colleges of Massachusetts, Pennsylvania, Michigan, Iowa and Oregon, and the total number of students now enrolled in these courses, give assurance that the work of this comparatively new profession will steadily widen in application and improve in quality, taking its permanent place as a profession at the side of architecture and engineering.

ARCHÆOLOGY

CLASSICAL ARCHÆOLOGY

WILLIAM NICKERSON BATES

Cyrene.—During the past year the excavations auspiciously begun by the Archæological Institute of America at Cyrene were completely stopped by the Turko-Italian war. Whether they will ever be resumed depends upon the Italian government. The early discoveries were most important and permanent discontinuation of the work would be a misfortune to classical archæology.

Sardis.—The work of the Princeton University expedition in clearing the

great temple at Sardis advanced, but the great mass of earth which now has to be moved makes progress slow. A number of new inscriptions have been discovered, and Messrs. Buckler and Robinson have published a lengthy study of the great inscription found in 1910. (See *Epigraphy, infra*.)

In many parts of Greece discoveries of importance have been made, chiefly by Greek archæologists, and accounts of earlier discoveries published. A few of them only can be mentioned.

Athens.—At Athens the sanctuary

of the Tritopatreis was discovered behind the church of Hagia Triada, near the Ceramicus. Near by were found 44 potsherds which had been used for ostracism. Each is inscribed with a name. At the harbor of Old Phaleron many early tombs were opened which contained geometric, proto-Corinthian and proto-Attic vases.

Delos.—The French School at Athens has continued its excavations at Delos, bringing to light a number of important inscriptions, as well as vases, coins and fragments of sculpture. The topography east of the Sacred Lake was also determined.

Delphi.—In the fall of 1910, H. Pomtow, accompanied by several archæologists, spent three months at Delphi making a careful study of the existing remains. As a result many new facts were discovered in regard to the monuments, and these have been set forth in a series of articles which have appeared weekly for about a year in the *Berliner Philologische Wochenschrift*.

Thessaly.—In Thessaly many sites have been excavated, chiefly by A. S. Arvanitopoulos, with very satisfactory results. The most important of these is Gonnus, where the walls of the acropolis are still standing in places to a height of 20 ft. Among the interesting finds here was an elliptical-shaped temple carefully built of small stones.

In Asia Minor excavations have been carried on at several places.

Miletus and Didyma.—In his seventh report, published by the Berlin Academy, T. Wiegand gives an account of his work at Miletus and Didyma since 1907. At the southern market a fine Corinthian building was found dedicated to Laodice, who was perhaps the wife of Antiochus II. An inscription shows that there was a temple of the Roman People and Roma near by. To the west was a large warehouse for grain, of Hellenistic date, and a temple of Sarapis; to the north a rectangular court with a gymnasium. The stadium was found, and a splendid propylon with Ionic architecture. At Didyma the Sacred Way and the ancient town were investigated. A semi-circular terrace with votive offerings was

found in front of the great temple. To the south was a stadium. More than half of the temple, which is well preserved, has now been excavated.

Samos.—T. Wiegand also reports upon his work at the temple of Hera on the island of Samos. It was a dipteral Ionic temple of *poros*, with eight columns on the eastern end, nine on the western, and 24 on the sides. This temple was begun upon the foundations of an earlier temple, one-third smaller, at the end of the sixth century B. C., but was never completed.

Ostia.—In Italy the excavations at Ostia have been continued and many of the public buildings completely cleared. The baths uncovered in 1888 have been further examined and the barracks for the *vigiles* and the quarter behind the theatre excavated.

Rome.—At Rome the investigation of the house of Livia was completed, and the modern buildings removed from the Baths of Diocletian, making that structure more imposing. The piece of "Servian" wall near the railroad station was removed to the Museo delle Terme.

In the field of Roman sculpture the publication by R. C. Bosanquet (*Annals of Arch. and Anthropol.* IV, pp. 66 ff.) of the colossal bronze head of Augustus, found by Garstang at Meroe and now in the British Museum, deserves mention.

Bibliography.—*Explorations in the Island of Mochlos*, by R. B. Seager (Boston and New York, American School of Classical Studies in Athens, 1912), is the final report of the work carried on by Mr. Seager at Mochlos off the east coast of Crete in 1908. The various finds, comprising stone and clay vases, jewelry, etc., are fully described and illustrated.

Engraved Gems, by Duffield Osborne (New York, Henry Holt & Co., 1912), is a history of gem engraving, ancient and modern, but the greater part of the book is devoted to antiquity.

Articles worth noting are: Buckler and Robinson's publication of the great Sardinian inscription (*Amer. Jour. Arch.*, 1912, pp. 11-82); A. L. Frothingham's "Who Built the Arch of

Constantine" (*ibid.*, pp. 368 ff.), an attempt to show that the arch was built in the time of Domitian; W. W. Hyde's two papers on the statues of Olympic victors (*ibid.*, pp. 203 ff.; and *Trans. Amer. Phil. Assoc.*, 1912, pp. 53 ff.); and two papers by Miss E. B. Van Deman on the dating of the Roman concrete monuments (*Amer. Jour. Arch.*, 1912, pp. 230 ff., and 387 ff.).

EPIGRAPHY

HARRY L. WILSON

Greek Inscriptions.—The work of American scholars in this field during 1912 has borne even greater fruit than that of the years previously reported. L. D. Caskey, of the Boston Museum of Fine Arts, in an interesting article in the *Athenische Mitteilungen* (xxxvi, 317-343, "*Die Baurechnung des Erechtheion für das Jahr, 409/8 v. Chr.*") makes use of the building inscriptions to advance our knowledge of the famous ruin on the Acropolis. The most important Greek inscription discovered during the year is the mortgage found in the American excavations at Sardis and published by W. H. Buckler and D. M. Robinson in the *American Journal of Archaeology*, xvi, 11-82. It is a long document containing many peculiar proper names, and is of particular interest to students of Greek law, not only as a mortgage of about 300 B. C., but especially as a record of a sale subject to redemption. During the campaign of 1912, too, the workers at Sardis brought to light a large number of complete Lydian inscriptions; and, most important of all, a bilingual inscription in Lydian and Aramaic, which promises to be the means of solving the problem of the Lydian language. Once this is successfully interpreted, it may throw strong light on the language and traditional Lydian origin of the Etruscans. Another important "find" of the present year at Sardis is a Greek inscription of early imperial times, 139 lines in length, which makes important contributions to our knowledge of the Roman history in Asia Minor at that period. As

these are still unpublished, more detailed description must be postponed to a later time.

Latin Inscriptions.—In the *American Journal of Archaeology*, xv, 523-532, under the title "The El-Tekkīyeh Inscriptions," Charles R. Brown, recently Director of the American School in Jerusalem, discussed the text of three Roman milestones which he had found near a railway station 34 kilometres from Damascus. One of these belonged to the time of Hadrian, two to that of Constantine, and all proved to have been previously published in the third volume of the *Corpus of Latin Inscriptions*. In the same journal, xvi, 1912, 97-100, A. W. Van Buren published eleven sepulchral inscriptions, which, with one exception, are in the possession of the American School of Classical Studies in Rome. The preceding article of the same issue (pp. 94-96) is by H. L. Wilson, and brings to light "A New Collegium at Rome." This *collegium* or association was that of the dealers in pigments and especially in the red mineral dye known as *minium*. The facts are derived from a finely cut inscription, found by Wilson in Rome in 1911, which records a gift of silver statues to the association in question. In the *American Journal of Philology*, xxxiii, 168-185, also, Wilson in the seventh article of his series on the Latin inscriptions at the Johns Hopkins University added 30 sepulchral inscriptions to those previously published. Two of these were of sufficient interest to warrant their reproduction in a plate, one on account of the sculptured figure of a praying girl above the inscription, the other on account of the cursive forms of some of the letters. Possibly the most interesting epigraphical task undertaken by an American during the year was the decipherment and publication of the leaden curse tablets of the Johns Hopkins University Museum by William Sherwood Fox. This work, originally begun at Wilson's suggestion as a doctoral dissertation, considerably transcends the ordinary limits of such monographs; and appears in its final form as a special supplement to the thirty-third volume of

the *American Journal of Philology*. From a promiscuous heap of several hundred small fragments of lead, closely written over in the cursive Latin script, Fox was able to re-

construct five distinct curse tablets, each with about 45 lines of new Latin text, an interesting addition to the ancient literature of malediction.

MUSIC

S. H. J. SIMPSON

Orchestral Music: New York Philharmonic.—In April the New York Philharmonic Society appealed to the public to help in establishing the society on a permanent and business-like basis. Under the new arrangement the corporation consists of musical, sustaining and annual members. Sustaining members contribute at least \$50,000; fellows in perpetuity, \$10,000; fellows for life, \$1,000; annual members at least \$10. The society is governed by a board of directors of three musical and nine sustaining members. The Pulitzer bequest (see *AMERICAN YEAR BOOK*, 1911, p. 769) was contingent upon the acquisition of at least 1,000 annual members representing the general public. Late in October the announcement was made that the requisite number of subscribers had been obtained, and that under the terms of the bequest the society was qualified to receive the half-million dollar gift.

Boston Symphony.—Max Fiedler terminated his connection with the Boston Symphony Orchestra in March, and was succeeded by Karl Muck, who returned to America after a four-year's absence, and made his first appearance in Boston Oct. 10. He is under contract for a five-years' engagement. Dr. Muck is succeeded at the Royal Opera, Berlin, by Emil Paur, sometime conductor of the Boston Symphony, New York Philharmonic and Pittsburgh orchestras, who inaugurated his Berlin engagement by conducting a performance of "*Die Meistersinger*," Sept. 7.

Philadelphia and Cincinnati Orchestras.—Leopold Stokowski, for some years conductor of the Cincinnati orchestra, abruptly severed his relations with that organization in March, and was relieved from his contract. In October he made his début as leader of the Philadelphia orchestra, and is

responsible for the somewhat unusual feat of publishing 50 programmes in advance. He is succeeded by Ernst Kunwald, late director of the Berlin Philharmonic Orchestra, who conducted his first concert in Cincinnati Nov. 15.

Minneapolis Symphony.—The Minneapolis Symphony Orchestra which, under the leadership of Emil Oberhoeffler, has attained extraordinary development since its organization nine years ago, made an extensive concert tour in the Spring. As guest of the Philharmonic Society a concert was given in New York in April. This organization, which started with a membership of 44, weekly rehearsals, and a guaranty fund of \$10,000, now numbers 80 musicians, rehearses daily, and is guaranteed \$65,000 annually.

London Symphony.—Arthur Nikisch, former conductor of the Boston Symphony, and at present a director at the Leipzig *Gerandhaus*, returned to America after an absence of nine years, and made a rapid and extensive tour with the London Symphony Orchestra. Four concerts were given in New York April 8, 10, 28 and 29.

Novelties.—The year's output in orchestral compositions of the first rank has been curiously meagre. Sibelius has a symphony, George Chadwick a symphonic suite, and incidental music to Shakespeare's "Othello" by the late Samuel Coleridge-Taylor was performed at His Majesty's Theatre, in London, on April 9. The New York Philharmonic on Feb. 15 played a posthumous symphony of Dvorak, the rights for the first American performance of which had been secured by Josef Stransky. As far as can be learned, this was the first public performance by any orchestra of the Bohemian composer's youthful work. Much discussion has been aroused concerning the author-

ship of a symphony, the manuscript of which was discovered by Prof. Fritz Steinbach in the archives of the University of Jena. This so-called "Jena Symphony," which popular opinion ascribes to Beethoven, for reasons circumstantial rather than because of striking similarity to his known works, was first publically played in St. Petersburg in December, 1911. The first American performance was by the Boston Symphony in Boston, Dec. 29, 1911. In March, Paris became enthusiastic over the performance of a series of exceptionally beautiful symphonic pictures, by Ernest Fanelli, who had been discovered by Pierné copying music for a living.

Soloists.—Among the foreign soloists appearing in America during 1912 were Josef Lhévinne, de Pachmann (who bade farewell to America), Katherine Goodson, Harold Bauer, Leopold Godowsky (after an absence of ten years), and Tina Lerner, pianists; Kreisler, Kubelik, Katharine Parlow, Zimbalist, Mischa Elman and Ysaye, violinists; Schumann-Heink, Tetrizzini, Cahier and Elena Gerhardt, singers.

Mendelssohn Hall, in West Fortieth street, New York, which was for years the home of the Mendelssohn Glee Club, and has provided accommodation for the Kneisels and similar organizations, closed its doors to music in the autumn of 1911, and was torn down during the summer of 1912. The new Aeolian Hall, seating 1,800, though larger than the strictly chamber-music room, is much smaller than Carnegie Hall, and is suited for both chamber and orchestral music. It was opened by Gottfried Galston, with a pianoforte recital, Nov. 2. With good acoustics, and the promise of an excellent system of ventilation, the new hall bids fair to fill an extreme need.

Opera:—"Mona."—The prize opera by Horatio Parker and Brian Hooker (see AMERICAN YEAR BOOK, 1912, p. 768) had its first performance at the Metropolitan Opera House, New York, March 14. Broadly speaking, popular opinion is more generously in its favor than the judgment of the critics—and this, too, although the opera is not essentially melodi-

ous. National pride in the production of an entirely American opera is undoubtedly a factor in this approval, but beyond that the public recognized a poem of picturesque beauty, skilfully set to exquisite and forceful music. The lacks are primarily neither with book nor score alone, rather with the music drama—briefly, an absence of the dramatic elements essential to a lyric drama, and a preponderance of musical dialogue. The opera was produced under the direction of Alfred Hertz. Louise Homer created the title rôle.

"*Ariadne*."—Richard Strauss' opera "*Ariadne auf Naxos*," the book by Hugo von Hofmannstahl, had its first performance in Stuttgart, Oct. 24. It has been described as "neither an incidental nor an entirely independent work, but rather a combination of both, with orchestral illustration to a Molière play and a musical afterpiece tacked on, in the guise of a one-act opera."

Among other novelties and premieres are: Wolf Ferrari's "*Le Donne Curiose*" at the Metropolitan, Jan. 3, new in America; his "Jewels of the Madonna" had its first American production at Chicago in February; "*Versiegelt*," by Leo Blech, Metropolitan, Jan. 20, *première*; J. van den Eeden's "*Rhena*," Brussels, Feb. 15, *première*; Attilio Paresi's one-act opera "A Lover's Quarrel," *première*, Philadelphia, Mar. 6; "*Le Cobzar*," by Gabrielle Ferrari, *première* in Paris in April; "The Children of Don," by Josef Holbrook, at Hammerstein's London Opera House, June 15, *première*; Siegfried Wagner's "*Banadietrich*," *première* in June at Vienna; Zandonais' "Conchita," *première* at Covent Garden in July. Henry Hadley's "Atonement of Pan" was produced in San Francisco, Aug. 10. The book is by J. D. Redding; the part of Pan was created by David Bispham. Massenet's "*Cendrillon*" had its first American performance at the Metropolitan with Maggie Teyte in the title rôle; and there was also an interesting revival in concert form, April 14, of Monteverdi's "*Orfeo*," composed in 1607. Two stars new to America were Margarete Matzenauer, a German mezzo from Munich, who made her Ameri-

can début at the Metropolitan as Amneris in "Aïda," the opening night of the 1911-12 season, and Lita Ruffo whose début as Hamlet in a revival of Ambrose Thomas's opera took place in Philadelphia in November, 1912.

Festivals and Choruses.—The number of festivals in America, in England and on the continent was legion, the types varying from that of Worcester, Mass.—the small city festival, which maintains a high standard of excellence, with a heterogeneous make-up of programmes and performers—to the gathering of worshippers at Bayreuth. At the latter, "*Die Meistersinger*" and "*Der Ring des Niebelungen*" were performed, beginning July 22, under the direction of Muck, Richter, Balling and Siegfried Wagner. The Munich Mozart-Wagner festival took place during the first week in August, directed by Walther and Röhr.

A competitive international musical tournament, for choruses and bands, organized by the municipality of Paris, was held May 26, 27, and 28. A large number of choruses took part, including several from England and the Mendelssohn Choir of Toronto. The latter made a remarkably successful concert tour during the winter, with the Thomas Orchestra of Chicago. Two concerts were given in New York in February.

In England, the Three Choirs, Hereford, Gloucester and Worcester, held their 189th annual meeting at Hereford in September. Sir Hubert Parry's new choral work, an "Ode on the Nativity of Christ" had its first hearing. Another English work of interest is Granville Bantock's setting for unaccompanied voices of Swinburne's poem "Atalanta in Calydon." The London Philharmonic Society celebrated its 100th anniversary in March. On the roll of honor of men who have been intimately connected with the organization are: Cherubini, Weber, Liszt, Mendelssohn, Spohr, Wagner, Gounod and Sterndale Bennett. Mendelssohn's "Elijah" was given as a music drama by the Moody Manners Company in Liverpool, in February.

The Oratorio Society of New York, since its foundation in 1873, has

been conducted by the Damrosch family. Walter Damrosch followed his father, the founder, and was, in turn, succeeded by Frank Damrosch, who resigned in the spring of 1912. The new director, Louis Koemmenich, made his début at a performance of "Elijah," on Dec. 3.

The Brahms Festival.—The first American Brahms festival was given in New York under the direction of Frank Damrosch and Walter Damrosch. The programmes were arranged with such thoroughness that discounting the "Song of Destiny," for chorus and orchestra and the "Tragic Overture," no great work beyond the magnitude of chamber-music was omitted at the four concerts given in Carnegie Hall, on March 25, 27, 29 and 30, by the Symphony Society of New York, and the Oratorio Society of New York.

Folk Music.—England has been keenly interested for the past few years in the collecting and publishing of folk music. The word "collecting" is here used to mean noting down words and music of songs directly from country-side folk singers. Cecil Sharp, who has been the most ardent leader of the movement, was awarded a Civil List Pension of £100 per annum in recognition of his services.

Necrology.—Jules Massenet, the French composer, born May 12, 1842, died Aug. 14, 1912. Among the large number of operas to his credit are "Manon," "Werther," "Le Cid," "Aïdée et Barbe-bleu," "*Le Jongleur de Notre Dame*" and "Thais." Gustave Charpentier, composer of "Louise," was elected to the chair in the *Institut* left vacant by the death of Massenet. Among the other deaths of the year are the following: Hermann Winkelmann, who died near Vienna, Jan. 19, created the rôle of Parsifal at Bayreuth in 1882; W. S. B. Mathews, music teacher and author, born London, N. H., 1837, died April 11; Jan Blockx, the Belgian pianist, died May 22, aged 51; Giulio Ricordi, head of the firm of publishers in Milan, died in June, aged 71; Gerrit Smith, 1853, organist, choir-master and professor of sacred music in the Union Theological Sem-

inary, died July 21; Samuel Coleridge-Taylor, the English composer, born Aug. 15, 1875, died Sept. 1; Rudolf Piege, Berlin's oldest critic, died in September, aged 82; Edgar Tinel, director of the Brussels conservatory, died Oct. 28, aged 58; Josef Wieniawski, Polish pianist, brother of the violinist, died in November, aged 74.

Municipal Music.—In a recent survey of the conditions of municipal music in 35 cities having a population of over 30,000 in 1908, 26 reported annual appropriations for the support of band or orchestral concerts. They are New York, \$100,000; Philadelphia, \$30,000; St. Louis, Mo., \$16,500; Boston, \$18,000 to \$25,000 (in 1912, \$19,000); Cleveland, \$10,000; Buffalo, \$6,000; San Francisco, \$10,000; Detroit, Mich., \$8,000; Cincinnati, Ohio, \$5,000; Minneapolis, Minn., \$11,000; Jersey City, N. J., \$3,750; Rochester, N. Y., \$10,000; Kansas City, Mo., \$6,500; Memphis, Tenn., appropriation varies; Syracuse, N. Y., \$1,500; St. Joseph, Mo., \$3,850; Portland, Oregon, \$6,000; Hartford, Conn., about \$1,200; Lowell, Mass., \$750; Trenton, N. J., about \$2,000; Yonkers, N. Y., \$500; Charleston, S. C., \$250 to \$300; Pawtucket, R. I., \$750; York, Penn., \$250; Superior, Wis., \$750; Elmira, N. Y., \$500.

Dallas, Texas, Davenport, Ia., Denver, Col., and St. Paul, Minn., contribute to city music from their respective park or other special funds. The St. Paul park fund in 1912, apportioned \$12,078, that of Denver, \$21,000. Five cities—Chicago, Des Moines, Bayonne, N. J., Harrisburg, Pa., and Pueblo, Colo.—make no municipal appropriation for music at present, although they have done so in the past. In the Pueblo parks, refreshment stands net enough to supply band music. Denver, Rochester and Charleston, S. C., combine their city appropriations with regular contributions from street railways. Harrisburg, Pa., has a band supported by public donations; Cincinnati music receives private as well as municipal assistance. Dallas, Texas, has a symphony orchestra, which, though supported by private contributions, gives free concerts once or twice a week. During 1912

a police band was organized in Philadelphia, composed of active members of the police force. The municipal activities here listed are chiefly limited to summer out-door concerts. Boston, Rochester and Cleveland are exceptions. Cleveland furnishes music "in community houses, at skating events and at athletic contests conducted by the city."

San Francisco.—The system of municipal music is new to San Francisco, where the appropriation was included in the budget for the first time in 1912. At present writing, a movement is on foot to make adequate provision for the continuation of the summer concerts indoors during the rainy season.

Boston.—In his annual report to the Mayor of Boston, dated Feb. 12, 1912, the chairman of the Music Department announces the expenditure for public music of \$17,599.15 out of an appropriation of \$17,600. The total attendance at summer band concerts is estimated at 316,050, at 75 concerts. During the winter season 53 concerts were given. Of these, 29 were orchestral concerts, 18 chamber music concerts, and six organ recitals. Twenty-nine of these concerts were given between Feb. 1 and April 26, 1911, and the remainder between Nov. 28, 1911, and Feb. 1, 1912. The total attendance is estimated at 49,756.

Although municipal orchestras have been projected with a varying degree of success in some of the cities listed above, Boston is the only one actually supporting such an organization. On Jan. 17, a bill was presented to the Massachusetts legislature and referred to the Committee on Cities; it authorized the city of Boston to appropriate annually, a small percentage of the assessed valuation of the city real estate toward the establishment of a permanent municipal opera house.

New York.—At the beginning of the current municipal administration the park and pier music in its present form had its birth in the constitution of a committee consisting of the commissioner of docks and ferries, the commissioner of parks, and a new official designated as the supervisor of municipal concerts in

parks and recreation piers. The \$100,000 annual municipal appropriation is divided between the piers and parks, and provides for a force of about 70 bands and conductors. During the summer of 1912, the peculiar problem of New York's varied population was successfully met by suiting the programmes in different neighborhoods to the national tastes of the foreign quarters along the docks.

Bibliography.—The following list of books of the year is necessarily limited, and makes no pretense to exhaustiveness. Some of the works written in English are published both in England and America:

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 BATKA, R., and WERNER, H.—*Hugo Wolf's Kritiken*. (Leipzig.)
 DAVISON, J. W.—*From Mendelssohn to Wagner*. (London.)
 DICKINSON, E.—*Art of Listening to Good Music*. (New York.)
 ———*Study of the History of Music* (rev. ed.). (New York.)
 EVANS, E.—*J. Brahms' Handbook to the Vocal Works*. (London.)
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- FOSTER, M. B.—*Hist. of Philharmonic Society of London*. (New York.)
 GARCIA, Manuel.—*Hints on Singing*. (Oxford.)
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THE DRAMA

MONTROSE J. MOSES

A dramatic season does not begin the first of the year, nor does it end the last day of December. The manager takes his annual continental rush in March, and by the close of a theatrical season in May, he has his plans fairly well formulated for the opening of his theatres in mid-August. Therefore, to accord with the Roman calendar and still be true to the actual theatrical year, the season of 1911-12 was at its height when 1912 was ushered in. The amusement public had already approved of DeMille's "The Woman," a play of American political conditions with the close study of type in a hotel telephone girl; of "Disraeli," Parker's romantic portrait of the statesman, which certain English critics pronounced un-English; of "Bought and Paid For," by Broadhurst, with its glitter and one emotional scene; of "Bunt Pulls the Strings," a Scotch domestic comedy

by Graham Moffat, charming as a novelty; of the Irish Players whose performance of Synge's fantastic "Playboy of the Western World" resulted in a vicious one-night riot, the noise of which rang through the Christmas holidays; of Belasco's "The Return of Peter Grimm," an effective presentment of spiritism, heightened by the natural work of David Warfield. The successes of all these became part of the dramatic history of 1912, together with the spectacular "Garden of Allah," which swamped the Hichens novel in scenery, and which, in a way, overclouded his name because of the collaboration of Mary Anderson; and Knoblauch's "Kismet," whose appeal was so largely dependent on the colorful and romantic braggadocio of Otis Skinner. On New Year's Eve and New Year's Day these were the dramas that were holding their own.

The economic condition confront-

ing such a city as New York in a theatrical way has always presented difficulties, the chief of which in 1912 has been the question of supply and demand. At least ten new theaters have opened during the past twelve months with no special reason to believe that sufficiently good plays are being written to keep the houses open without a loss to the manager. There are so many theaters in New York, still the theatrical Mecca, however Chicago may be developing in that line, that the critic finds himself sorely pressed on "first nights," when often there are two or more openings, while it is almost impossible to cultivate a theatrical clientele when a public has nearly forty amusement centers to choose from.

Miss Grace George's very brief engagement in Cicely Hamilton's "Just to Get Married" was due to the weakness of the comedy, however caustic it aimed to be regarding the full significance of its title in modern life. A Hawaiian play of much unique color was Richard Walton Tully's "The Bird of Paradise"; the plot did not bear analysis, the total effect being dependent on native atmosphere and on the distinctive acting of Miss Laurette Taylor in the rôle of Luana, an Hawaiian girl.

Lewis Waller entered the managerial ranks as producer of "A Butterfly on the Wheel," by Hemmerde and Neilson, in which a sensational court-room scene during the trial of a divorce case afforded an excellent opportunity to Miss Madge Titheridge; it also introduced to American audiences the earnest personality of Sidney Valentine as leading counsel. An over-talked play was Miss Marion Fairfax's "The Talker," reminiscent of Eugene Walter's "Paid in Full."

In the dramatization of John Fox's "The Trail of the Lonesome Pine," we were given another evidence of the fact that a good novel does not always mean a good play.

One of the sensations of the year was the Max Reinhardt wordless play, "Sumurun," a story scarcely fit for words, but affording ample scope for impressionistic scenery and stage grouping, along the line of suggestions further developed by Gordon Craig, as well as noteworthy

acting by a German company from the Deutsches Theatre. Mme. Simone, undoubtedly an actress of temperament, struggled through an unfavorable engagement chiefly devoted to an exploitation of Bernstein. Late in January, she produced Donnay's "The Return from Jerusalem," adequately translated by Owen Johnson; the theme was a typical French handling of the Jewish question.

Not being able to force the public into a liking for A. E. W. Mason's "The Witness for the Defence," a case of murder in India covered up for the sake of the woman who did it, Miss Ethel Barrymore revived the delightful Hubert Henry Davies comedy, "Cousin Kate," and presented an ironical one-act farce by Barrie, "A Slice of Life," satirical of the advanced drama, and requiring a deep sense of burlesque. Miss Gertrude Elliott struggled through the well-written but inane Pinero comedy, "Preserving Mr. Panmure."

Winthrop Ames opened his Little Theatre with the presentation of John Galsworthy's humanistic and fantastic comedy, "The Pigeon." The playhouse is a model of good taste, affording just the intimacy the so-called "new drama" demands. Shortly after Mr. Ames offered a series of afternoon performances of a dreary thirteenth century drama, "The Flower of the Palace of Han," and Charles Rann Kennedy's "The Terrible Meek," an earnest one-act piece which raised a storm of comment because, played in semi-darkness, its final revelation disclosed a vivid picture of the Crucifixion. In both plays Edith Wynne Matthison took the lead.

Henry Miller's vehicle was A. E. Thomas's "The Rainbow," a sentimental comedy of the home type, whose charm was largely due to the acting which unfolded the story of how a father can live down his past, uplifted by the dainty girlishness of his daughter. The writing, in spots, was sparkling. At a Woman Suffrage Party benefit, marked by mediocrity, Bernard Shaw's "Press Cuttings" was cleverly done by Oswald Yorke and company; here is a skill deserving of more legitimate presentation.

A disagreeable tragedy, but none the less an acute study of Japanese character, was "The Typhoon," translated from the Hungarian and effectively portrayed by Walker Whiteside. Charles Hawtrey appeared in Charles H. Brookfield's "Dear Old Charlie;" his audiences were thoroughly depressed by the dullness of this farce. But a melodramatic farce, typical of American manufacture, "Officer 666," was much more diverting in its police atmosphere.

Rudolf Besier's "Lady Patricia," a brilliant but meandering comedy, was Mrs. Fiske's spring vehicle, Lewis Waller's "Monsieur Beaucaire," was overclouded by memories of Mansfield's faultless painting of Booth Tarkington's romantic hero.

The season of 1911-12, for so the spring of 1912 may be termed, closed in a whirl of noteworthy comic-opera revivals. Of course the manager catered to the average taste for musical comedy in such a piece as "Two Little Brides," which James T. Powers did his best to enliven, but the public showed their good taste by patronizing Gilbert and Sullivan pieces which, to the splendid credit of Messrs. Shubert and Brady were given in notable fashion. "Patience" has lost none of its zest; neither have "Pinafore," "The Mikado," and "The Pirates of Penzance," though the latter is not replete with the lyrics which ever remain classics of their kind. De Koven's American light opera, "Robin Hood," was likewise sumptuously revived, exhibiting all its original freshness of melody and costume, but as a librettist, Harry B. Smith is not of the same class as Gilbert. These revivals are doing much for public taste.

One of the last productions was Paul Armstrong's "The Greyhound," whose scenes mostly occurred on the *Mauretania*, and whose melodramatic plot dealt with mid-ocean gambling and many more melodramatic incidents.

The theatrical year of 1912-13 opened with a big success, James Montgomery's "Ready Money," which very cleverly, even though noisily, demonstrated how money draws money by the mere show of it in race-track fashion. "The Master of the House,"

by Edgar James, was aimed to teach the great lesson of dispelling domestic monotony, and Philip Bartholomae's "Little Miss Brown" was a farce based on the rule of hotels that no woman can register at night without baggage or reference or a husband.

A period of successes now began to open other theatres. But with them came the very evident tendency on the part of the American manager to seek for English material and English companies. Shaw's "Fanny's First Play" is a brilliant satire on dramatic critical life in London, and on modern children breaking from the traditions of their parents. This new product, produced here and abroad by Granville Barker, shows signs of a heart beneath the sharp flow of wit. Bennett and Knoblauch's "Milestones," illustrative of the manners, customs, prejudices and progress of 1860, 1885 and 1912, is largely dependent for its charm upon the "growing old" process of its characters and the feminine contrast in costume of the three periods. The play is conventional, the wit of a sentimental kind.

"June Madness" was the venture of Henry K. Webster into the realm of drama, a scorchingly earnest play in which a mother, thoroughly white-washed, never satisfactorily explains herself to her daughter June, whose birth was the result of that madness. Mr. Webster's philosophical intent was stronger than his logic. Pinero's much-talked-of "The 'Mind the Paint' Girl" was given to Miss Billie Burke, and she acquitted herself markedly in the rôle of the show girl who finally captures a viscount and flaunts the fact in the face of the English public. Sutro's "The Perplexed Husband" gave John Drew the usual middle-aged rôle which has to cope with a recalcitrant wife whose head is momentarily befogged with suffrage ideas.

"The Ne'er-do-well" was a dire attempt on the part of Charles Klein to convert Rex Beach's novel into a play. The melodrama of it was crude, the Panama Canal incentive a farce; in fact the comedy was largely farcical. David Belasco's contribution to the year has been

Alice Bradley's "The Governor's Lady," a simple plot of a wife too old-fashioned to meet the exacting post her husband makes for her, and Edward Locke's "The Case of Becky," wherein Miss Starr depicts a dual personality with creditable effect. In both pieces, Belasco dramatizes accessories; the final act of the first piece is an exact reproduction of a Childs Restaurant; the final act of the second piece is a doctor's laboratory where the whole secret of Becky's fear is hypnotized out of the villain. Neither piece is distinctive, except in mounting.

Unlucky in Knoblauch's "Discovery of America," Mr. Waller was thrown back upon Shakespeare who offered him a most suitable rôle in "Henry V." Frederick Arnold Kummer chose a striking title in "The Brute" which failed to come up to expectations, even though it had the elements of grip in the problem confronting husband and wife—the latter made rich by one whom the husband supposed to be a mutual friend, but who was in reality his wife's lover. More virile and closer to American condition is Bayard Veiller's "Within the Law," whose main object is exemplified in the person of a girl wrongly accused of theft, wrongly imprisoned and determined to "get even" with her employer. If one knows the law, one may steal up to the limits of the law; this immoral supposition detracts from the sympathy of the character of the girl who propounds the theory.

The present reviewer boldly discounts musical comedy, but has taken "The Count of Luxembourg" as an imported specimen. The music by Lehar, of "Merry Widow" fame, is sweet, but reminiscent, while a waltz up and down stairs relates it to the type which also includes "The Siren," cut to the limitations of Donald Brian. The "books" to these pieces are invariably dull. Even Wallace Irwin, one of our keenest newspaper humorists, was unable to give the zest and snap of a good story to Walter Damrosch's lyrical score, "The Dove of Peace," which contains some delightful orchestration.

Had "The New Sin," by B. MacDonald Hastings, been properly

launched instead of being given on its opening night in New York to a select audience, it might not have roused public antagonism. It presented the unusual situation of seven men in the cast and no women; it discussed the conditions of a will which made it seem incumbent on the part of a family's eldest son to commit suicide; its characterization was unusually strong. But an anti-climax was reached when the author, forsaking his printed version, wrote a fourth act in order to do the thinking which an audience would naturally have done after the third act. The piece, originally produced in Chicago, was speedily killed.

"Little Women," dramatized by Marian de Forest from the Alcott story, has met with wide acceptance despite the fact that every lover of the book had at least one ideal shattered; it is a clean and wholesome piece for the schoolgirl, while for the nursery citizen, Winthrop Ames' production of "Snow White" has special and deserved appeal. The tendency to give children's plays is seen by the active preparation of managers for the Christmas holidays in New York, and undoubtedly later through the country: Belasco's production of Rostand's "The Good Little Devil"; Eleanor Gates Tully's "The Poor Little Rich Girl"; Maude Adams' revival of "Peter Pan," and the opera presentation of "Hansel and Gretel."

In presenting Schnitzler's "Anatol," Mr. Ames showed discrimination in using Granville Barker's adaptation. At best the piece moves on the thin edge of decency; its delicacy depends absolutely on its Viennese sparkle. "The Blindness of Virtue," by Cosmo Hamilton, was wrongly pictured on the bill-boards as a morality play; instead it was a modern comedy presenting the vital question how much of the sex problem should be told our children. The piece was crudely, even slovenly, developed, but deserves respectful notice because of its sincere intention. Even the good acting of Miss Helen Ware could not save Elmer Harris's "Trial Marriage," which considered the subject of its title with actual and unhappy results; the practice of the theory was flimsily argued.

An unfortunate spectacular fiasco was George C. Tyler's sumptuous production of "The Daughter of Heaven," by Judith Gautier and Pierre Loti; the latter came to New York and personally supervised the rehearsals. But there was too much China, too many long speeches about the unity of the yellow race, and too little real passion or real play. A dignified attempt, illustrative of the best traditions and the most restrained use of scene, was William Faversham's "Julius Cæsar," wherein the actor played Antony to Tyrone Power's Brutus, Frank Keenan's Cassius, and Julie Opp's Portia. In every way the performance was worthy of the praise it received. Shakespeare was further adequately and at times notably represented by the Marlowe-Sothern combination in repertory.

Jules E. Goodman's "The Point of View" was nondescript and a failure, as was also Augustus Thomas's "The Model." Quickly upon Mr. Thomas's one failure came another in "Mere Man," supposed to be a play on suffrage, and brilliant in its first act, as far as writing is concerned, but it led nowhere and its characterization was specious.

John Mason appeared in Bernstein's "The Attack," an adaptation of the usual French play of affairs, working up to one scene of brawn and muscle where the hero, accused of theft, bullies one of his political constituents into coming to his defense. The piece was a moderate success. Miss Annie Russell, under patronage, headed her own company in a repertory of English classical comedy including "She Stoops to Conquer," "Much Ado About Nothing," and "The Rivals"; a certain amateurish quality was evident, but in no way detracted from the amusement of these favorites in drama.

Perhaps the greatest success of the late fall has been "The Yellow Jacket," by George C. Hazelton and Benrimo, presented in the Chinese manner with all the curious accessories of the Chinese theatre. Nazimova's appearance in James Bernard Fagan's adaptation of "Bella Donna" from the Hichens novel, marked her dominant element of disagreeable sensuality. As a rebel from such

darkness, William Collier in his own play, "Never Say Die," is a suitable contrast.

The rapidity with which plays come and go is only slight indication of the strain imposed upon the producing managers. Success is balanced by failure: Carlyle Moore's farcical "Stop Thief" is being enthusiastically greeted by those who were loyal to "Officer 666," while Mary Roberts Rinehart's "Cheer Up" languishes, despite the recollection of this author's "Seven Days."

England continues to supply us with dramas of an intimate nature—not too bright in atmosphere, but close studies, literary in the color of their dialogue. Examples of such have been found in Stanley Houghton's "Hindle Wakes" and Githa Sowerby's "Rutherford and Son." Both are of somber character and both tinged with dialect. They are middle class in atmosphere, and in both there is the domineering figure of a father ruling the household in unrelenting fashion. They are excellent reading plays, "Rutherford and Son" being exceptionally strong in construction. "Hindle Wakes" brought to America Herbert Lomas, whose rôle of the father, Nathaniel Jeffcote, was created in Miss Horniman's repertory company of Manchester. In the second piece Norman McKinnel gave a masterly delineation of Rutherford.

Charles Frohman's treatment of Elizabeth Baker's "Chains" was astounding. In its original form, when presented by the manager in his London Repertory Theatre scheme, the play dealt with the wage-earner's problems in England. These conditions and mundane struggles, for the better understanding of American audiences, were transferred to New Jersey, and the playbill announced "Chains" as a play by Porter Emerson Browne, and Miss Baker was credited with having furnished "ideas." The Americanized version was filled with a coarseness the original did not possess, and Miss Baker must have taken some satisfaction in the result, for "Chains" ran only one matinee.

An English offering which is doing a most astounding business is Raleigh

and Hamilton's melodrama of sporting life, "The Whip." One of the largest theatres in New York is packed from pit to dome every performance, and audiences are thrilled by an automobile smash-up, a railroad wreck, and a most realistic race. This piece contains all the essential elements of melodrama—a villain steeped in unmistakable blackness, a broadly subtle adventuress, a believing heroine, and a hero, repentant of his past life.

A novelty, suggestive of much good, is the Children's Theatre, which has recently been opened, on the roof of the Century Theatre, by George C. Tyler. W. K. Vanderbilt has financed the venture, and the opening bill was Frances Hodgson Burnett's "Racketty-Packetty House," which, as a book, was a most delightful bit of fiction. The dramatization contains much of the original quaintness. The theatre itself is comfortable, and the idea conceived by Mr. Tyler possesses infinite possibilities for good.

Mrs. Fiske has been appearing in Edward Sheldon's "The High Road," described as "a pilgrimage in five parts." The piece is full of glaring faults in its portrayal of a country girl's fall and of her rise through social endeavor for working girls. Some of the writing is good, some of the situations impossible; while the outcome of the piece is weak, if not absurd. The only excellence of "The High Road" is that it furnishes Mrs. Fiske with a variety of motives for varied acting.

Frederic and Fanny Locke Hatton have had produced by Belasco a middle-aged comedy, "Years of Discretion." One must accept this piece on the strength of its sparkle. The purpose of the play is to show how a New England widow determines to taste of life once again and awakens after experiment to the fact that

middle age is fit for more quiet things. Analyzed, "Years of Discretion" is loosely constructed and too close to farce to be true. The final act is disappointingly inartistic. But the performance possessed snap, polish, and true comedy in its second scene.

It is Laurette Taylor's good acting and J. Hartley Manners' avowed determination to write a one-*rôle* play that have made "Peg o' My Heart" a success. Peg is an Irish girl who reaches English relatives *via* New York. These relatives are to educate her for a fortune which awaits her twenty-first year. Hot of tongue and red of hair, Peg holds her own in a house where she is treated with scorn by everyone save Jerry, who later turns out to be a baronet, Peg's guardian, and Peg's lover. The play is nothing in the way of originality; Peg's humanness is what appeals.

At the close of the year Robert Hilliard was gripping audiences in "The Argyle Case," written by Harriet Ford and Harvey J. O'Higgins, with the assistance of Detective Burns. Grace George's tour in Compton Mackenzie's "Carnival" was short lived, as was also Mme. Simone's in Louis N. Parker's "The Paper Chase."

The past year, dramatically, has been encouraging. The motion picture still hangs a menace to the theatre, especially when Bernhardt on the screen draws her audiences, and Daniel Frohman declares himself actively in sympathy with it. There was never a time when the young playwright had more ample opportunity to be recognized. Every new theatre which opens is another outlet for the unproduced play. For the theatres have to be filled in order to pay rent. That fact is what we have to confront in New York and elsewhere as 1913 approaches.

XXXIII. LITERATURE AND LANGUAGE

ANCIENT LITERATURE AND PHILOLOGY

ANCIENT LITERATURE

(Additions from *Papyri*)

CLIFFORD H. MOORE

Sophocles' "The Trackers."—As in previous years, the important additions to ancient literature in 1912 are given us by Dr. A. S. Hunt. The ninth volume of the *Oxyrhynchus Papyri* brings as its greatest prize considerable portions of a satyr play by Sophocles, the *Ichneutae*, "The Trackers" (no. 1174). The portion recovered amounts to something less than four hundred lines, many of which are incomplete. The papyrus fragments are written in an uncial hand of the latter part of the second century of our era. To scholars the arrangement of the lines, the punctuation, and the critical marks are all of interest; but the majority will find their concern with the plot and dramatic treatment.

The play is based on the exploits of the child Hermes in stealing Apollo's cattle, and inventing the lyre. The scene is on Mount Cellene, in Arcadia; the *dramatis personae* are Apollo, Silenus, the nymph Cyllene, and probably Hermes; the chorus naturally consists of satyrs. In the prologue Apollo announces that his cattle are lost, and offers a reward for them; he declares that he has vainly searched in Thrace, Thessaly, and Boeotia. Silenus with attendant satyrs appears and offers to undertake the search. As a reward for success, Apollo promises freedom and gold. Thus the satyrs become the "trackers" and give the name to the play. Led by the confused hoof-prints to the entrance of a cave, the chorus are suddenly terrified by

strange sounds which issue therefrom—the notes of the lyre, which the marvelous boy has just invented. Silenus, who is unable to quiet his terrified followers for long, presently knocks at the mouth of the cavern. The nymph Cyllene appears, reproves the satyrs for their conduct, and warns them that they must keep her secret: within she is caring for the new born child of Zeus and Maia, who although not yet six days old, has grown to youth's stature and has made a lyre from a tortoise shell and some cowhide. The mention of the last rouses the suspicions of the satyrs, who declare their belief that here is the thief of Apollo's herd. Cyllene's indignant assertion of the child's innocence ends the connected portions of the play. Yet enough besides remains to show that Cyllene was discomfited, that Apollo appeared and gave Silenus and his band the promised rewards. Probably in the last portions Hermes was confronted by Apollo, acknowledged his guilt, and assuaged his brother's wrath by the gift of the lyre.

In the portions recovered there are comic touches and opportunities for even boisterous action, but nothing equal to one or two scenes in the *Cyclops* of Euripides. Probably, as Dr. Hunt remarks, the humor of the piece was chiefly developed in the (missing) scene in which the tricky child faces the indignant Apollo.

In making the theft of the cattle precede the invention of the lyre, Sophocles differs from the *Homeric Hymn*, and shows the antiquity of the form of the story which Apollodorus chose. Original with the poet were probably the device of having the satyrs discover the cat-

tle, and the selection of Mt. Cyllene as the hiding place. The time of composition is as uncertain as before, save that the metrical strictness seems to point to an early date. Although the lines naturally show more resolutions than those of the tragedies, there is not the freedom which we find in the *Cyclops*. The diction remains distinctly tragic, with a slight admixture of every day words and expressions.

Sophocles' "Eurypylos."—A second series of fragmentary papyrus (no. 1175) apparently contain portions of a tragedy of Sophocles hitherto unknown, to which the editor gives the name *Eurypylos*, for it obviously dealt with the Trojan War, and related the killing of Eurypylos by Neoptolemus. Although numerous, the fragments are too seriously injured to tell us much. It seems clear, however, that apart from Eurypylos and Neoptolemus, Astyoche, mother of the former, was one of the characters. We have broken lines from the messenger's speech announcing the death of Eurypylos, Astyoche's lament, which in unusual fashion interrupts the messenger's tale, and some brief lyrics. Possibly other lines refer to the place of the hero's burial; but unhappily little can be determined with certainty.

The *Ichneutae* and the *Eurypylos* have also been published separately by Dr. Hunt with the Clarendon Press.

Satyrus' "Life of Euripides."—The third important find is a long *Life of Euripides* by Satyrus, preserved on a fragmentary papyrus, also of the second century after Christ. To our surprise the life is in the form of a dialogue between one principal and two subordinate speakers. It is popular, diffuse, and contains many quotations and anecdotes. In it are discussed Euripides' life, style, place in the development of tragedy, and his views on all kinds of subjects; there is, however, no criticism of the tragedies in the extant fragments. The whole forms a welcome addition to our knowledge of Peripatetic biography.

Besides these three important items we have the usual fragments of extant secular and theological works,

of which no detailed mention can here be made.

SEMITIC PHILOLOGY AND LITERATURE

MORRIS JASTROW

Philology.—Within the field of comparative Semitic philology, the *Grundriss der vergleichenden Grammatik der semitischen Sprachen*, by Prof. Carl Brockelmann, the first volume of which, comprising the chronology and etymology, is now complete and of which during the last year the syntax has begun to appear, merits special mention. It is the most elaborate and most scientific investigation of the kind that has as yet been attempted; and it has already proved to be an invaluable reference work for all students of philology, because of the careful manner in which the enormous mass of material has been put together and discussed. Of the "Syntax," four parts have appeared, covering the various forms of the simple sentence, the noun, pronoun, the object, and the various time-relationships. On the completion of the work full indices will be added, through which alone a publication of this kind can be made fully serviceable.

Encyclopedia of Islam.—Another undertaking of interest to circles outside the range of Semitic studies is the *Encyclopedia of Islam*, which began to appear as far back as 1908, but of which only a few parts have been issued. This publication, fostered by the International Union of Scientific Academies, aims to cover the geography, ethnology and biography of the Mohammedan peoples. The parts appear simultaneously in German, French and English, and some idea of the scope may be gained if one considers that the 768 pages in small print and in two columns which have thus far appeared, carry the work down to BOG only. The editors, Profs. Houtsma and Hartmann, have secured the coöperation of Arabists in all parts of the world. In the last part special mention should be made of the valuable article on the Berbers by the most eminent authority on the subject, Professor René Basset.

Assyriology.—An important publication within the field of Assyriology is the work on *Babylonian Boundary Stones and Memorial Tablets in the British Museum*, published in two volumes, by L. W. King. The value of the 36 texts (some of them very elaborate) published here, consists partly in the light these boundary stones throw upon legal conditions during the various periods of Babylonian history and partly in the symbols of the gods which accompany the stones and which are of the greatest possible importance in the study of the religious ideas developed in Babylonia and Assyria.

Cuneiform Texts.—Of a large collection of cuneiform tablets, found at Drehem (near Nippur) and scattered throughout the museums of Europe, several volumes have been published. M. H. de Genouillac has prepared a volume of texts from this place found at Constantinople and Brussels, Stephen Langdon, of Oxford, some of the texts that have found their way to England, and Mr. King, of the British Museum, a selection of those that were acquired by that institution. The texts are of importance chiefly because of the dates attached.

Prof. A. T. Clay, of Yale University, has added two more volumes to the series of cuneiform texts published by the Museum of the University of Pennsylvania (Vol. II, Parts 1 and 2, of the new series), which furnish several hundred additional texts from the Persian and Cassite periods and thus supplement earlier volumes by Prof. Clay in this important series. The same author has also brought out a most important compilation of the "Personal Names found in Cuneiform Texts of the Cassite Period," presenting material of great philological value.

Tello Excavations.—MM. Heuzey and Thureau-Dangin have begun the publication of a work on the *Nouvelles Fouilles de Tello*, furnishing detailed accounts of the more recent excavations at Tello, begun as far back as 1881, and continued since the death of M. Sarzec by Gaston Cros. Of special value in the latest part of this work to appear is an account of an old Babylonian necropolis, carefully dug out, which has added much in-

formation as to the manner in which the dead were buried in the days of the early Babylonian rulers.

INDO-EUROPEAN PHILOLOGY

(Exclusive of the Germanic Languages)

ROLAND G. KENT

This department has been enlarged to embrace also the field of Greek and Latin syntax; it may most conveniently present the work of American scholars in the form of a bibliography. Especial attention may be called to the work of Bloomfield, Edgerton, Haas and Oliphant in Sanskrit; of Fay in the origin of Latin suffixes (see also AMERICAN YEAR BOOK, 1911, p. 779), of Sturtevant in Greek noun formation, of Scott in Homeric diction (see also AMERICAN YEAR BOOK, 1911, p. 781), and of Steele in the syntax of Livy.

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Abbreviations: *AJP.*, *American Journal of Philology*; *CP.*, *Classical Philology*; *CQ.*, *Classical Quarterly*; *OW.*, *Classical Weekly*; *JAOS.*, *Journal of the American Oriental Society*; *JRAS.*, *Journal of the Royal Asiatic Society*; *KZ.*, *Zeitschrift für vergleichende Sprachforschung, begründet von A. Kuhn*; *PAPA.*, *TAPA.*, *Proceedings, Transactions of the American Philological Association.*

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- "Composition or Suffixation? Latin Words Ending in *-āgo*, *-āgo*, *-āgo*; the Latin Suffix *-(u)lentus*." (KZ., 45, 111-33.)
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GREEK LITERATURE

PAUL SHOREY

The *American Journal of Philology*, the *American Journal of Archaeology*, *Classical Philology*, and the other periodicals mentioned in the first annual review for 1910 (p. 162), continue the publication of excellent if not always epoch-making work on a wide variety of subjects, by a considerable number of scholars, among whom may be named as contributing to the output of the present year, Professors Adams, Buck, Bollinger, Bonner, Capps, Dickerman, Harry, Heidel, Rees, Robinson, Scott, Smith, and Sturtevant.

Especially to be noted perhaps are Prof. Heidel's article on "Anaximander" in *Classical Philology*, Buckler and Robinson's Greek Inscriptions from Sardes in the *American Journal of Archaeology* (see XXXII, *Epigraphy*), and Charles R. Post's Dramatic Art of Sophocles in the twenty-third volume of "Harvard Studies." Further than this it is unnecessary to compile a formal bibliography from the tables of contents of these journals. The *Transactions of the American Philological Association* publish annually a fairly complete bibliography of the members of the Association for the preceding year.

Two readable books, the *Harvard Essays on Classical Subjects*, by eight members of the faculty, and the *Columbia Lectures on Greek Literature*, to which representatives of six universities contributed, may serve, and were perhaps designed, to remove the reproach that American scholarship is confined to the dative case. From a more technical point of view the most important single book of the year is Prof. John Williams White's *The Verse of Greek Comedy*. The entire material is exhaustively re-interpreted on the prin-

ciples of the so-called "New Metric," for which Prof. White has exhibited in the past few years the zeal of a convertite. His lucid and temperate discussion of the controversy is the first treatment of the revolutionary doctrine that makes it intelligible both to supporters and opponents. With this and the translation of Schroeder's article on the "New Metric" by the present reporter in the April number of *Classical Philology*, the chief documents in the case are easily accessible to the limited public that concerns itself with such things. Prof. William Scott Ferguson's *Hellenistic Athens* is an excellent example of broad historical work based on the specialist's minute knowledge. Prof. Perrin's *Plutarch's "Nicias" and "Alcibiades," translated with Introduction and Notes*, is the third of a series of three volumes, and completes his presentation to the English reader of Plutarch as a source and Plutarch's sources for the greatest century in the history of Athens. The *Classical Papers of Mortimer Lamson Earle* contain much that scholars will be glad to have collected in this convenient form, and are a fitting memorial to one too early lost to American scholarship. Dr. Frank E. Robbins' *The Hexameral Literature* (Chicago dissertation) is a solid study in the hitherto somewhat neglected field of the influence of Greek philosophy on the interpretation of *Genesis*. Dr. Samuel Lee Wolff's elaborate monograph on the *Greek Romances in Elizabethan Prose Fiction* is published under the auspices of the Columbia University department of English and comparative literature. Dr. H. T. Archbald's *The Fable as a Stylistic Test in Classical Greek Literature* is a Johns Hopkins dissertation.

The appearance of the first 15 volumes of the "Loeb Library of Translations from the Classics with accompanying Texts," is an event which would deserve record here even apart from the considerable place which is to be assigned to American scholars in the execution of the great plan.

The death of Prof. Goodwin (see *Classical Philology* for July, the *Classical Journal* for October, and Prof. Gildersleeve in *American Jour-*

nal of Philology, vol. 33, p. 367) is felt as a personal loss by his many pupils and by the still wider circle of those who were taught by his books or took pride in his fame.

LATIN LITERATURE

CHARLES KNAPP

American work in Latin literature still consists mainly of articles in the periodicals and in the volumes of studies published under the auspices of various universities. Several books, however, fall within this field and the kindred field of Roman history (see the bibliography below, under Abbott, Botsford, Earle, and Harvard Essays). One important book, Olcott's *Thesaurus Linguae Latinae Epigraphicae*, was brought to an untimely end, after the publication of three more fascicles in 1912 (17-19), by the death of the author.

More attention, apparently, is being paid by American scholars to text criticism. Here belongs a book of great value, a critical edition of Ammianus Marcellinus (Berlin, Weidman, 1910), by C. U. Clark (see also the bibliography, under Foster, Hatch, and Johnson). A notable event was the publication of *The Classical Papers of Mortimer Lamson Earle*. Prof. Earle, who died in 1905, was an adept in the criticism and emendation of Greek and Latin texts. His collected papers deal mainly with Greek authors, but contain much of interest to the student of Latin literature, especially in connection with Horace. The tendency to trace the influence of Latin authors on later ages was not so much in evidence (see, however, the bibliography, under Gummere).

American scholars are giving much attention to rhythm in Latin prose writers, following here Zielinski. In his edition of Ammianus (see above), Prof. Clark lays much stress on such matters. So, too, did Prof. Harmon in his paper on the "Rhythmical Clausulae in Ammianus Marcellinus," to which reference was made last year (see also the bibliography below under Shipley). A warning against such studies is uttered by Paul Shorey, in a review of

C. Zander's *Eurythmia vel Compositio Rhythmica Prosae Antiquae*, (*Classical Philology*, 6.494-497).

Much good work appears in reviews. Doctors' dissertations, too, not infrequently give results of importance and promise well for the future. Lack of space, however, forbids mention of such work in detail. The space available can best be devoted to a bibliography with a few words of comment accompanying some of the titles listed.

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Abbreviations are employed as follows:

AJP., *American Journal of Philology*; *CJ.*, *Classical Journal*; *OP.*, *Classical Philology*; *CW.*, *Classical Weekly*; *HS.*, *Harvard Studies*; *PAPA.*, *Proceedings of the American Philological Association*; *TAPA.*, *Transactions of the American Philological Association*.

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HATCH, W. H. P.—"A Manuscript of Jerome's *De Viris Illustribus*, belong-

- ing to the General Theological Seminary in New York." (*HS.*, 23, 47-69.)
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MODERN LANGUAGES AND LITERATURE

GERMANIC LANGUAGES AND LITERATURE

DANIEL B. SHUMWAY

German Fiction.—The ever-growing interest in German literature is evinced by the increasing frequency of the translations from modern German authors. In some cases the work has hardly made its appearance in Germany before arrangements are made for translating it into English. This is the case with Gerhart Hauptmann's latest novel *Atlantis*, dealing with an American theme, a translation of which, by Adele and Thomas Seltzer, has just been issued by B.

W. Huebsch. The powerful woman novelist Clara Viebig is the subject of an article in the *Review of Reviews* for May, and a volume of her short stories, entitled *Guilty, and Other Short Stories* has been translated by O. F. Theis. Ludwig Ganghofer's *Gewitter im Mai* and two short stories by Heinz Tovote, *Frau Agna and Mutter*, have been issued in German by Brentano. Margarete Böhme's story, *A Department Store*, translated by Ethel C. Mayne, has been published by Appletons, and her art as novelist discussed in the *Bookman* for June. O. E. Lessing discusses Liliencron, Dehmel, Hauptmann and others in his latest critical

work *Masters of Modern German Literature*.

The classic writers are not entirely forgotten for the moderns, Carlyle's translation of Goethe's master novel *Wilhelm Meister* having been reissued by Dutton in Everyman's Library. Further, J. McCabe has furnished us with a new life of Goethe, *The Man and His Character* (Lippincotts), H. W. Boynton has discussed him in his volume, *The World's Leading Poets* (Holt), and *Gleams from Goethe* have been chosen and translated with an introduction by H. Attwell. In the general field, J. G. Robertson has followed his earlier work on German literature by a new one entitled *Outlines of the History of German Literature*. The influence of Dante Gabriel Rossetti on German literature is discussed by L. A. Willoughby in a work issued by the Oxford University Press. In the nature of scientific monographs are J. F. Hausmann's article "German Estimation of Novalis from 1800 to 1850" in *Modern Philology* for January, and A. E. Gubelmann's *Study on the Sensuous in Hebbel's Lyric Poetry*, issued by the Yale University Press. An admirable anthology of German lyrics in translation is the *Oxford Book of German Verse, from the 12th to 20th Century*, prepared by H. G. Fiedler with a preface by Gerhart Hauptmann.

German Drama.—This field is, as usual, well represented. A. Duker in a recent work, *Modern Dramatists*, has discussed the more important German ones, among others Hauptmann and von Hofmannsthal. Four plays of Hauptmann have been translated by Ludwig Lewisohn and a second volume is in preparation. Two of Wagner's most important music dramas, the *Master-singers of Nuremberg*, and *Tristan and Isolde*, have been translated by the well known critic W. J. Henderson and published by Dodd, Mead & Co. The story of Bayreuth, as told in Wagner's *Bayreuth Letters*, has been published in Caroline V. Kerr's translation by Small, Maynard & Co. Scientific in character are the following essays and dissertations: "Heroines in the Dramas of Grillparzer,"

by Eliz. A. Hermann (*Modern Philology*); *The History of the Chorus in the German Drama*, by Elsie W. Helmrich (Columbia University Studies); and *The Philology of Schiller in Its Historical Relations*, by Emil C. Wilm (Luce & Co.).

German Texts.—The following dramas have been edited for school use: Hebbel's *Agnes Bernauer*, by M. B. Evans (Heath); Lessing's *Nathan der Weise*, by J. G. Robertson (Putnam); Schiller's *Don Carlos*, by F. W. C. Lieder (Oxford). This latter is especially welcome, as this play had not as yet been edited in America. In prose works, Freytag's historical novel, *Das Nest der Zaunkönige*, has been abridged and edited by E. C. Roeder and C. H. Handschin (Heath), and two stories of A. von Keller, *Die drei gerechten Kammacher* and *Frau Regel Arnrean und ihr Jüngster*, issued by the Oxford University Press. A. F. W. Grimm's interesting story, *Aus der alten Kaffeemühle, Geschichten aus dem Studentenleben*, has been published by the Antigo Publishing Co. New editions of frequently edited tales are: Hauff's *Das kalte Herz*, by F. J. Holzwarth and W. J. Gosse (American Book Co.); Storm's *Immensee*, by C. G. Elmer and J. G. Neumarker (Merrill); Wildenbruch's *Das edle Blut*, by Allyn, and the same author's *Der Letzte*, by J. H. Beekman (American Book Co.). J. H. Hülshof has prepared a *Deutsches Lesebuch* (Jenkins), F. Betz a well chosen selection of German humor, *Deutscher Humor aus vier Jahrhunderten* (Heath), and C. W. Collman a volume of *Easy German Poetry for Beginners* (Ginn & Co.). Among the new grammars the conversational method of Dr. Max Walther of Frankfurt, who gave model lessons in New York last winter, prepared in collaboration with Karl A. Krause under the title *Beginners' German* (Putnam), deserves to head the list. Next comes the admirable *Elementary German Grammar*, by E. C. Wesselhoeft, who has had such success with his composition books. Other grammars are *Progressive Lessons in German*, by R. W. Huebsch and R. F. Smith; *German for Daily Use*, by E. P. Prentys (Jenkins); *A First*

German Book, by G. T. Ungold (Putnam); and *A Conversational Grammar*, by J. Bithell (Putnam).

German Teaching.—This department is represented by the following articles: C. H. Handschin, "Problems in the Teaching of Modern Languages" in *Education* for Dec., 1911; "Historical Sketch of the Gouin Series-System of Teaching Modern Languages and of its Use in the United States," by the same author in the *School Review* for March; C. F. Kayser, "May the Modern Languages be Regarded as a Satisfactory Substitute for the Classics" in the *Educational Review* for May; E. D. Wright, "Foreign Language Requirements for the A. B. Degree" in the *Classical Journal* for May.

German Philology.—The most important event in this field is the appearance of a new series of scientific monographs edited by Prof. Collitz of Johns Hopkins and entitled *Hesperia, Schriften zur germanischen Philologie*. The series is opened by a brilliant scholarly investigation, *Das schwache Präteritum und seine Vorgeschichte*, from the pen of the editor, to which he has prefixed a most interesting and impartial résumé of what American scholarship has thus far accomplished in Germanic philology for the enlightenment of those European scholars who are disposed to disregard American publications. As No. 2 of the series there appeared the dissertation of Mary C. Burchinal on *Hans Sachs and Goethe, A Study in Metre*, which sheds but little additional light on this moot question, but gives a detailed account of the views of her predecessors. An able dissertation, introducing new ideas into the field of syntax, has been written by Richard Fey on *Neuhochdeutsche Apophthegmen-Gruppen*. Though printed in Halle it was offered for the degree of Ph.D. at the University of Pennsylvania. Of importance is also the issuing of an English edition of Viator's *Kleine Phonetik*, by W. Rippmann, under the title *Elements of Phonetics, English, French and German* (Dutton). L. Bloomfield has written an excellent study of the "E-Sounds in the Language of Hans Sachs" in *Modern Philology*

for April, and B. Boezinger a dissertation on *Das historische Praesens in der älteren deutschen Sprache* (Leland Stanford, Jr., University).

The earlier New High German is represented by a novel based on Luther's life by W. S. Davis, entitled *The Friar of Wittenberg* (Macmillan). Further, the first volume of an English translation of Zwingli's *Latin Works and Correspondence with Selections from His German Works* has been issued by Putnam. The Middle High German period is represented by a new verse translation of the *Nibelungenlied*, by Arthur S. Way, under the title *Lay of the Nibelung Men* (Putnam). Belonging more to the domain of German philosophy, but of great general interest are the several translations of Nietzsche's works and biography. His autobiography, *Ecce Homo*, has been translated by A. M. Ludovici, who has translated also Nietzsche's *Twilight of the Idols*, his *Antichrist* and *Notes on Zarathustra*. M. Mügge has rendered Nietzsche's *Early Greek Philosophers and Other Essays*, and P. N. Cohn his *Human, All Too Human, a Book for Free Spirits*. Elizabeth Foerster Nietzsche's almost too flattering life of her brother has been translated by A. M. Ludovici. The first volume, *The Young Nietzsche*, dealing with his life from 1844 to 1876, has already appeared; the second, *The Solitary Nietzsche*, is now in press.

Swedish.—The interest in the austere Swedish poet Strindberg, due in part to his death during the year, overshadows that in all other Scandinavian writers. His works are being rapidly translated into English and numerous critical estimates of his art have appeared. So many are there, in fact, that space will permit of the enumeration of only the most important. For a full bibliography the reader is referred to the complete list given by Prof. Arch. Henderson in the *Bulletin of Bibliography* for July. The following plays have appeared: *The Father, Countess Julie, the Outlaw, The Stronger*, translated by Edith and Warner Oland (Luce & Co.); *Easter and Lucky Peter*, translated by Velma S. Howard; *The Dream Play, The Link,*

I. LITERATURE AND LANGUAGE

The Dance of Death, translated with an introduction by Edwin Björkman, who has translated also the tragedy, *There Are Crimes and Crimes*, and who has just issued a further volume containing *Miss Julie*, *The Stronger*, *Creditors* and *Pariah*. A. Dukes gives an estimate of Strindberg in his *Modern Dramatists*. The works of Ellen Key, the Swedish champion of free love, continue to be translated into English, her *Love and Ethics*, by M. B. Brothwick and F. L. Wright, and *Morality of Women and Other Essays*, by M. B. Brothwick alone. A sequel to Karin Michaelis' much talked of novel, *The Dangerous Age*, entitled *Elsie Lindtner*, has been translated by Beatrice Marshall. Hjalmar Söderberg is discussed and called a "lesser Anatole France of the Far North," by Edwin Björkman in *Is There Anything New*. The Augustana Book concern has issued three volumes of Swedish tales in the original, and as a sign of the increasing interest in the study of the Scandinavian tongues, we have a school edition of Gustaf Geijerstam's *Mina Pojkar*, edited by J. Alexis with an introduction and notes, in the college and high school series of Swedish authors issued by the same firm.

Norwegian.—In Norwegian literature Ibsen, as usual, stands in the front rank of interest. His collected works have been revised and edited with an introduction by W. Archer (Scribners). A. Dukes discusses his influence in his *Modern Dramatists*, and Otto Heller has written an excellent book on his *Plays and Our Problems* (Houghton Mifflin). Björnson's play, *When the New Wine Blooms*, has been translated by Lee M. Hollander for the series of Poet Lore Plays, and his art is discussed by A. Dukes in his *Modern Dramatists*. *Norse Tales* are retold for little children by F. Freeman and R. Davis. Scientific in character are A. C. Crowell's *Introductory Lessons to Old Icelandic* and J. W. Hartmann's dissertation on *The Gangu Krolfssaga, a Study in Old Norse Philology* (Columbia University Studies). The new society for the advancement of Scandinavian, organ-

ized in Chicago in 1911, has issued a second number of its *Proceedings*.

Danish.—The most important translation from this language is George Brandes' well known work, *Main Currents in Nineteenth Century Literature*, published in six volumes by Macmillans. Of great interest also is the translation of three plays of Ludwig Holberg, the father of Danish comedy, by H. W. L. Hime, indicating, as it does, a revival of interest in the earlier literature of this country. J. Grant Cramer has translated Grundtvik's *Fairy Tales*.

Dutch.—The literature of Holland is better represented than in 1911 when no article or translation appeared. During the year *The Hundred Best Dutch Poems* have been published by Geo. W. Jacobs & Co., and A. Dukes has discussed the well known dramatist, Herman Heijermans, who, like the German playwrights, shows strongly the influence of Ibsen. Petrus Blok's monumental *History of the Netherlands* in five volumes has just been completed by the issue of the fifth volume on the 18th and 19th centuries, translated by A. Bierstadt (Putnam).

ROMANCE LANGUAGES AND LITERATURE

BENJAMIN P. BOURLAND

Necrology.—Rufino José Cuervo died in Paris, July 17, 1911. He was born at Bogotá in 1844, spent nearly all his life in philological study, and was among the most exact and thorough of scholars in Spanish, easily the first of all who have come from South America. His principal works were the repeated editions of Bello's celebrated grammar, and his *Diccionario de construcción y régimen de la lengua castellana*, a splendid work of which but two volumes have been published. It is understood that the manuscript for the continuation has been left complete. Gustav Groeber, professor at Breslau 1874-1880, at Strassburg 1880-1909, died at Strassburg Nov. 6, 1911; a man of very broad learning and interests, one of the first scholars of Germany, known to all students of the Romance languages everywhere as

the founder and editor of the *Zeitschrift für romanische Philologie*, and editor of the *Grundriss der romanischen Philologie*. Wilhelm Clœtta, professor at Jena 1893-1909, and at Strassburg from the latter year, died Sept. 25, 1911. His principal interest was in the history of literature, his chief works studies of the *Moniage Guillaume* and the *Enfances Vivien*. Marcelino Menéndez y Pelayo died at Santander, May 19, 1912. He was the first man of letters and scholar of Spain, and a great figure in the scholarship of the world. From the very long list of his important writings we note the *Historia de los Heterodoxos de España*, *Historia de las Ideas Estéticas en España*, the *Antología de Poesías Líricas*, and the long series of *Estudios*. At his death he was professor of the Universidad Central, Director of the Royal Academy of History, and Director of the National Library, all of Madrid.

There is no special change to be observed in the position of Romance studies in the world, and in this country. No great discovery, or epoch-making publication marks the year 1912. In this country, there is to be observed a slight decrease in the output of class-room editions, and an encouraging, though very slight, increase in the publication of purely scientific effort. American scholars continue to find their greater interest in Spanish and Old-French literature.

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ENGLISH LANGUAGE AND LITERATURE

C. G. CHILD

Innumerable texts, reviews and minor notes, often of great value and attesting the industry of American scholars, must necessarily be excluded from the narrow limits of this article, the object of which is to indicate the general trend of activity in the field of English.

Philology.—The continued neglect of linguistic study is to be deplored. It is not an arid and barren discipline, but, properly considered, a humanity, and, for the graduate student, through the character of the training it affords, a helpful correction to the futile æstheticism and dilettantism which students so often

display. Articles on linguistic matters are more numerous than last year; among them may be mentioned Bright's on an idiom of the comparative in Anglo-Saxon (*Mod. Lang. Notes*), Hale on the harmonizing of grammatical nomenclature (*Publ. Mod. Lang. Association*), Miss Pound on "Intrusive Nasals in Present Day English" (*Eng. Studien*), Curme on the relative (*Journal of Eng. and Germ. Phil.*), F. A. Wood's articles as touching English, and the admirable work of the Dialect Society in studying American English (*Dialect Notes*).

Old English Period (449-1150).—Articles in this field are, as usual, few, but good: Bright on "Exodus" (*Mod. Lang. Notes*), S. Moore on the same poem (*Mod. Phil.*), F. Tupper, Jr., on the Cynewulfian runes (*Mod. Lang. Notes*) and notes on various poems (*Journal Eng. and Germ. Phil.*), Lawrence on the "Haunted Mere" in "Beowulf" (*Publ. Mod. Lang. Association*), J. M. Hart on II. 168-9 of that poem (*Mod. Lang. Notes*), and Klaeber's valuable reviews of works upon it in a number of periodicals.

Middle English Period (1150-1500).—Sommer has continued the publication of the Arthurian Vulgate (Carnegie Institution). Welcome contributions are Lawrence's "Medieval Story" (Columbia Lectures), Mosher's *Exemplum* (Columbia Press), Miss Dudley's striking demonstration of the Egyptian elements in the "Body and Soul" legend (Bryn Mawr Monographs), and F. Tupper's delightful article on Giraldus Cambrensis (Sewanee). Hemingway's rendering of the *Morte Arthur* will be welcomed (Houghton Mifflin Co.). American activity in the study of Chaucer may continue to be a matter of pride: Kittredge (*Mod. Phil.*); Root (*Eng. Stud.*); Hathaway (*ibid.*); C. Brown, Lowes, MacCracken, S. Moore, Miss Hammond, H. S. V. Jones (*Mod. Lang. Notes*—the last named also in *Publ. Mod. Lang. Association*). Special mention must be accorded to the first complete rendering of Chaucer in modern English by Tatlock and Percy Mackaye, published in a sumptuous format (Macmillan).

In the still too little explored 15th century, MacCracken has published a poem on Ralph, Lord Cromwell (*Mod. Lang. Notes*), of interest in relation to Lydgate (see also Miss Hammond, *ibid.*), and S. Moore a most helpful article on "Patrons of Letters in Norfolk and Suffolk, c. 1450" (*Publ. Mod. Lang. Association*). In relation to the earlier drama, see Mackenzie's "New Source for *Mankind*" (*ibid.*), Spenser's volume on "Corpus Christi Pageants in England" (Baker and Taylor), and Cady on the Towneley cycle (*Journal Eng. Germ. Phil.*). The publication by Flügel and others of early song-miscellanies in *Anglia* is continued by Padelford, "English Songs in Ms. Selden B. 26."

Modern English (1500-date).—To the reviewer it seems as if nine out of ten scholars in America devoted themselves to the drama of the 16th and 17th centuries. Spenser is not wholly neglected: Greenlaw (*Mod. Phil.*); Cory, whose volume also touches on the Fletchers and Milton (University of California); Bruce (*Mod. Lang. Notes*); Padelford ("Allegory of the Faerie Queene," Ginn). Other works, not on the drama, are: Wolff's *Greek Romances in Elizabethan Prose Fiction* (Columbia Studies); Miss Hatcher's admirable article on "Aims and Methods of Elizabethan Translators" (*Eng. Stud.*); Tieje's "Expressed Aim of the Long Prose Fiction from 1579 to 1740" (*Mod. Phil.*), and Westcott's publication of a "find" of some little interest, namely, new poems of James I of England (Columbia Series). But new editions and articles in the field of the drama are innumerable: Wallace's *Evolution of the Drama to the Time of Shakespeare*; Miss Foster, "Dumb Show before 1620" (*Eng. Stud.*); Boland, *Time in Elizabethan Drama* (Yale Studies); Graves, "Religious and Political Plays" (*Mod. Phil.*); W. J. Lawrence, *The Elizabethan Playhouse and Other Studies* (Lippincott) and "Light and Darkness in the Elizabethan Theatre" (*Eng. Stud.*); Graves on the Elizabethan stage (*Mod. Phil.*); Forsythe on *Jeronimo* (*Mod. Lang. Notes*); a sheaf upon Shakespeare—Scholl, *Winter's Tale*

(*Mod. Lang. Notes*); Law, Richard III (*Publ. Mod. Lang. Association*); Tynan, "Greene and 'Shakspere'" (*ibid.*); Hanford, "Suicide in Shakespeare" (*ibid.*); Padelford, *As You Like It* (*Sewanee Review*); Northup, "Bibliography" (*Journal Eng. Germ. Phil.*); Arnold on the soliloquies (Columbia Press); William Winter, *Shakespeare on the Stage* (Moffatt, Yard & Co.); Henneman's *Shakespeare and Other Papers* (reprints: University of the South); Stoll, "Criminals in Shakespeare" (*Mod. Phil.*); Adams on Jonson (*Mod. Lang. Notes*), and on Heywood (*Eng. Stud.*); Miss M. L. Hunt on Thomas Dekker (Columbia Press; also *Journal Eng. Germ. Phil.*); Pierce, Dekker and Ford (*Anglia*); Adams, Hausted's *Rival Friends* (*Journal Eng. and Germ. Phil.*), and Brathwaite's *Mercurius Britannicus* (*Mod. Lang. Notes*). The Restoration period is represented by Forsythe's article on Shadwell (*Journal Eng. Germ. Phil.*). Here, in leaving the 17th century, may be mentioned Hall's monograph on *Idylls of Fishermen* (Columbia Press), Hasting's article on "Errors and Inconsistencies in *Robinson Crusoe*" (*Mod. Lang. Notes*), Hand Browne's delightful article on "Scottish Ballads" (*Sewanee Review*), and with the latter Belden's discussion of the relation of balladry to folk-lore (*Journal of American Folk Lore*). The 18th century is, as usual, scantily represented: Havens, "The Romantic Aspects of the Age of Pope" (*Publ. Mod. Lang. Association*); Wells, "Henry Fielding and the Crisis" (*Mod. Lang. Notes*). Among litera-

ture relating to the 19th century, it is always difficult to draw a line between constructive criticism and popular exposition, and only really helpful contributions can be here noted. Among them may be noted C. E. Morgan's *Rise of the Novel of Manners* (Columbia Press); Cunliffe's "Modern Thought in Meredith's Poems" (*Publ. Mod. Lang. Association*); Lounsbury's *Early Literary Career of Robert Browning* (Scribner); W. S. Johnson's *Thomas Carlyle, 1814-1831* (Yale Press); Barley's "The Morality Motive in Contemporary English Drama" (University of Texas); the volume of *Lectures on Literature* delivered at Columbia by members of its faculty (Columbia Press); Neilson's stimulating *Essentials of Poetry*, and Reed's substantial volume of *English Lyrical Poetry* (Yale Press), a gallant attempt to encompass in more than mere outline the range of our lyrical verse from its beginnings to the present day.

The founding of the *English Journal* (University of Chicago Press) may be noted. In this connection, success may be wished for every influence tending to ameliorate the deplorable evils incidental to the college requirements for admission in English.

Necrology.—Horace Howard Furness, editor of the *Variorum Shakespeare*, died Aug. 13 in his 79th year. His work, one of the greatest monuments of American scholarship, will be continued by his son, Horace Howard Furness, Jr., for some years associated with his father as collaborator.

AMERICAN LITERATURE

(Oct. 1, 1911, to Nov. 15, 1912)

ARTHUR HOBSON QUINN

This review includes those works of creative literature that are of notable worth or have attracted such widespread interest that a judgment upon them seems necessary in this place. Works of scholarship are mentioned only when upon distinctly American themes.

Poetry and Drama.—While *The Poems and Dramas of George Cabot*

Lodge (2 vols., Houghton Mifflin Co.) include of course no poems written in the limits of our period, they are of such importance in the history of American Literature that they must take precedence in the year's review. The verse dramas "Herakles" and "Cain" and the sonnets placed George Cabot Lodge easily first in these fields, while as

the apostle of revolt he was always significant.

In *The Singing Man*, by Josephine Preston Peabody (Houghton Mifflin Co.), we find another example of the poetry of revolt and of criticism of social conditions. Hatred of oppression, a wide love of humanity, combined with a constructive optimism make these new poems of Mrs. Marks perhaps the most notable volume of new poems of the year. The artistic finish of the verse, and the high sincerity of the impulse were to be expected from the author of "The Piper."

The Little Gray Songs from St. Joseph's, by Grace Fallow Norton (Houghton Mifflin Co.), are real poetry. The simplicity, the inevitability that belong to high art are manifested in these lyrical cries of pain born of a great soul bearing with courage a hopeless doom. It is many a day since America has produced poetry like the fifth, the eleventh, the twenty-fourth or the thirtieth of these songs.

Far Quests, by Cale Young Rice (Doubleday, Page & Co.), shows a remarkable, at times a great, ability in phrasing, a keen delight in nature and a deep insight into the human aspects of passion.

Scum of the Earth, by Robert Haven Schauffer (Houghton Mifflin Co.), is a volume with a few poems that are worth while, "Scum of the Earth," "Marsyas," and "Washington," combined with some "fillers in." The title poem has a good basic thought and a good climax.

The Sailor Who Has Sailed, by Benjamin R. C. Low (John Lane), contains a number of poems that reveal careful workmanship, and now and then striking phrases. The author never descends to tricks or devices to gain attention. While there is no new note struck, there is at times decided distinction.

The Candle and the Flame, by George Sylvester Viereck (Moffatt, Yard & Co.), contains some verses that reveal a lyric swing and poetic vocabulary, but nothing vitally new. It is destructive criticism that is found; there is nothing constructive.

Tomorrow, by Percy Mackaye (Stokes), is the most significant

drama of the year. The art of Mr. Mackaye, deepening and becoming more convincing, has produced a play which treats bravely and constructively a great problem in modern life. The production of a better race is made the theme of a play that is practically adapted for the stage and is also literature.

The Novel.—The novel of the year is unquestionably *The Reef*, by Edith Wharton (Appletons). The brilliant phrasing, the careful planning of the effect, the establishment of standards of social and moral conduct have rarely been equalled, even in Mrs. Wharton's own work. In the character drawing, she has added to the gallery of her portraits the figure of Anna Leath, a truly wonderful picture of the refined, cloistered woman, and in the character of the hero she has shown again her signal ability in visualizing the attitude of man toward woman. The other characters, especially the adventuress, are deftly sketched.

In *The Heroine in Bronze*, by James Lane Allen (Macmillan), the author, leaving for the time the manner of *The Bride of the Mistletoe* and *The Doctor's Christmas Eve*, has written simply a charming love story, in which are revealed also some of his theories of art. The hero, sure of himself, is a finely drawn character and the heroine is rarely conceived.

The Voice, by Margaret Deland (Harpers), is a novelette, in which the realism of character drawing, the idealism of the point of view and the combination and harmonizing of the natural and the spiritual that have become characteristic of Mrs. Deland's work are shown in their fullness of power.

The Inheritance, by Josephine Daskam Bacon (Appletons), is a vitally interesting story in which the writer has accomplished the unusual task of representing the attitude of a boy and a man with distinct success. The character drawing is fine. The main thesis, the inheritance of the hero's traits from his father and his mother, is really wonderfully done.

Tante, by Anne Douglas Sedgwick (Century Co.), is a brilliant portrayal of the character of an abso-

lutely selfish woman, set off by a carefully studied background of English and continental life, social and artistic. The somewhat leisurely progress of the novel is atoned for by the brilliance of the style.

The Butterfly House, by Mary Wilkins Freeman (Dodd, Mead & Co.), is a story which, though based on a rather improbable situation, is told with Mrs. Freeman's conscientious art. The carefully restrained humor, and the utter abandonment of any cloak to realism are clearly to be recognized in this latest book of the author's.

The Street Called Straight (Harpers) is an interesting novel which derives its main interest from the admirable contrast of the characters of an American business man and an English army officer, rivals for the love of a cultivated American girl. The case for America has rarely been better put, and the style is distinguished.

Alexander's Bridge, by Willa S. Cather (Houghton Mifflin Co.), is a study of the effect of two different women upon a strong man's nature, and the consequent struggle between the claims of love, duty and professional pride on one side, and on the other, the love and the memory of his youth. There is a distinction of style and a fine reticence of passion that are unusual to-day.

In *The Citadel*, by Samuel C. Merwin (Century Co.), we have a novel which depends for its interest on its timeliness. The hero, John Garwood, a congressman, is made the concrete representative of the most advanced progressive ideas, which are put in an interesting manner, though at times the artistic unity is marred by a too definite preachment. The character drawing is good, but the types of the reactionary politicians are very conventional.

A Hoosier Chronicle, by Meredith Nicholson (Houghton Mifflin Co.), is a thoroughly entertaining novel with good character sketching, some humor, and a well arranged plot. The life described is laid in Indiana mainly during the last decade, and a good picture is drawn of political and social conditions there. The relations of Sylvia and her father

while he is not known to her and later when she makes her appeal to him on his own account are skillfully drawn.

Jennie Gerhardt, by Theodore Dreisler (Harpers), presents a very realistic story of a girl's life as determined by the pressure of circumstances into a mould where it seemed impossible to shape that life in accordance with the usual moral and social standards. The character drawing is good.

A Man's World, by Albert Edwards (Macmillan), is a very interesting story of a man's growth and development away from narrow and conventional moral standards to a broader knowledge of life. There is an objective quality—the characters are of interest only as they affect the main character, not in themselves.

To M. L. G. (Stokes) is a remarkable book in some ways, revealing frankly and with an eye to the picturesque, phases of theatrical life from which the glitter and tinsel have been removed, leaving the sordid side exposed in a most realistic manner. That the book is a revelation of a personal experience for the purpose of recalling a lover (as the preface states) is somewhat difficult to believe.

The Sentence of Silence, by Reginald Wright Kauffman (Moffat, Yard & Co.), is a very realistic description of a young man's career, with the thesis that children should be enlightened as to sex matters instead of being allowed to find out the great facts of life themselves. The climax is handled rather skillfully. That the book will serve any useful purpose is questionable, since the philosophy of life expressed by Judith Kent, the heroine, places the whole question of purity in women on a low plane, and the book is so framed that this seems to be the author's standpoint.

A great contrast to this type is *Mother*, by Kathleen Norris (Macmillan). This is a story based upon a study of average American middle life, containing a direct criticism of the small family so common at the present day. It is appealing in its natural quality.

The Rich Mrs. Burgoyne, a later book, also by Mrs. Norris (Macmillan), is similar to *Mother* in its general atmosphere, yet shows versatility in the treatment of character. It satirizes gently the pretence and the nervous strain of American life in well-to-do society of a small town in California. Both stories have a healthful influence.

The Old Nest, by Rupert Hughes (Century Co.), is a simple yet appealing story of the relations of parents and children, touching upon the lack of fidelity to the memories of one's youth.

Belonging to the same general type of novel, *The Love that Lives*, by Mabel Osgood Wright (Macmillan), is a rather placid story of life in a small New England town, with accurate and sympathetic character drawing. The note of self-sacrifice is simply and delicately touched.

The Heart of Us, by T. R. Sullivan (Houghton Mifflin Co.), is a pleasant leisurely novel of Boston life, with a flavor of society, mingled with some pictures of theatrical life. The love story of Staunton Ives and Dorothy Ashley is rather weak.

Another contrast to the realistic stories above mentioned is *Beauty and the Jacobin*, by Booth Tarkington (Harpers). This is a brilliant novelette of the Terror, told almost exclusively in dialogue.

Both Sides of the Shield, by Major Archibald Butt (Lippincott), which is a novelette dealing with a contrast between Northern and Southern ideals, derives its chief interest from the personality of the author. The story, while not highly original, is told in a straightforward interesting manner.

The Ordeal, by Charles Egbert Craddock (Lippincott), is a story of Tennessee, dealing with the search of a mother for her child who has been kidnapped by the mountaineers, in order to hide the crime of murder. There is a sense of dignity in the style and the descriptions are good.

The Recording Angel, by Corra Harris (Doubleday, Page & Co.), is a novel of Georgia life written with a penetrating sense of the moral contrasts of life and revealing a keen wit. Some pages are sparkling with

brilliant sentences, which even at times draw one's attention away from the plot.

The Mountain Girl, by Payne Erskine (Little, Brown & Co.), is a story laid in the Carolina mountains, told in a fresh and interesting manner. The characters are vividly portrayed.

The Goodly Fellowship, by Rachel C. Schauffer (Century Co.), has an unusual plot, concerned largely with the adventures of missionaries in Persia. Despite the somewhat ragged style, the book holds one's attention.

The Charioteers, by Mary Tappan Wright (Appletons), is a rather forceful story of moral issues, with a nervous, slightly overstrained style, but presenting some good character drawing.

Stover at Yale, by Owen Johnson (Stokes), is a much discussed story of college life with a sound thesis, the necessity of democracy in that life. There is some vivid writing, but the importance of the particular local institutions attacked is somewhat over emphasized.

Short Stories.—*From the South of France*, by Thos. A. Janvier (Harpers), is a collection of stories, revealing an intimate knowledge of modern Provençal types, and written in a style that is a refreshment to the spirit. The comedy is real, growing out of the characters and their relations and is based on the broadest and keenest knowledge of human nature.

In Sixes and Sevens, by O. Henry (Doubleday, Page & Co.), we have another volume from the story teller who could pack into a very few words characterization of the most definite kind, conveyed in language that is frequently slangy, and at times artificially highly colored, but nevertheless is often vigorous to the point of distinction.

Following O. Henry at some distance perhaps, but with a reality that is sometimes startling, *Buttered Side Down*, by Edna Ferber (Stokes), deals with the shop girl, the waitress and the second-rate actress in a way which, despite slang and a strain for attention, has a grip upon life that counts.

The Raid of the Guerilla, by Charles Egbert Craddock (Lippincott). In this collection of short stories, Miss Murfree continues to depict the life of the Tennessee mountaineers, which she made so long ago her own. While the plots are at times slight, the style is distinguished and the descriptive power is frequently remarkable.

Mothers to Men, by Zona Gale (Macmillan), continues the stories of Friendship Village which have delighted so many readers. If this volume never quite reaches the level of her *Pelleas and Etarre*, it nevertheless stands out among the lesser books of stories for the unflinching distinction of its style.

Vistas of New York, by Brander Matthews (Harpers), is concerned with revelations of phases of metropolitan life, some tragic and some comic. They are told with the writer's usual facility in expression and in some cases, as "In a Hansom," with real power.

In *Behind the Dark Pines*, by Martha Young (Appletons), the author, while an evident imitator of Joel Chandler Harris, has struck at times a fresh note, and there is a crispness and unity about the stories that make them attractive.

Biography.—*Emerson's Journals* (4 vols.), 1838-55, edited by Edward W. Emerson and Waldo Emerson Forbes, is continued this year in the production of four volumes carrying the work from 1838 to 1855. Notwithstanding the omission of significant comment on Emerson's part on such events as the Divinity School address of 1838, or the address on "The Transcendentalist," 1842, it is hard to estimate properly the importance of this publication. It shows Emerson on sides that his works do not reveal, touches of humor that one hardly expects, in short a human side which in his case is especially valuable. The development of his interest in slavery and in communities, his views of Carlyle, Tennyson and of Thoreau, his trip to England in 1847-8, and many other phases of biographical value are to be found in a new setting.

In *Mark Twain, a Biography* (Harpers) Albert Bigelow Paine has writ-

ten a remarkable biography. Personal association and careful search through Mark Twain's works have enabled the biographer to represent adequately the writer whose work lent itself so thoroughly to biographical treatment.

In *The Life and Times of Winslow Homer* (Houghton Mifflin Co.), William H. Downes has written in all probability the definitive life of that painter. After a sympathetic exposition of Homer's place in American art, he traces the course of his development from his beginning as an illustrator, through his Civil War sketches, his interpretation of negro life, and, most important, his pictures of the sea and the seafaring folk. The book is splendidly illustrated with reproductions of Homer's masterpieces.

Of unusual interest is the volume entitled *The House of Harper*, by J. Henry Harper. It is the biography of a firm rather than of an individual, but it also is to a certain extent a section of the history of our literature. Important details concerning some of the foremost authors of the last century are told in an interesting style, with a wealth of detail, and an eye for the essential that are frequently striking.

Woodrow Wilson, the Story of His Life, by William Bayard Hale (Doubleday, Page & Co.), is a clear, interesting account of Woodrow Wilson, the President-elect, written from an authoritative point of view. While the style is at times careless, the masterly way in which the author makes clear the development of Mr. Wilson's character and the progress of his fight for democracy makes the book a notable one.

The Letters of Sarah Orne Jewett, edited by Annie Fields (Houghton Mifflin Co.), is a collection of letters that are literature. Miss Jewett's interested, joyous attitude toward life is revealed in a series of comments upon books, nature and people, exquisite in expression and dictated by sound judgment and tender sympathy with whatever she came in contact. An admirable introduction is furnished by Mrs. Fields.

Personal Traits of Abraham Lincoln, by Helen Nicolay (Century

Co.), is a book which is pleasant and chatty and would give to one unacquainted with Lincoln's life a fair, if somewhat idealized picture of some phases of his career. It adds little, however, to what has already been published concerning Lincoln.

Lee, the American, by Gamaliel Bradford, Jr. (Houghton Mifflin), is a very sympathetic study of Robert E. Lee, calm and dispassionate, more concerned with painting a general portrait than with establishing a chronology. The biographer has preserved an objective attitude and has arrived at his result by means of sifting evidence from a great number of sources.

Of interest as a contrast is *Robert E. Lee, Man and Soldier*, by Thomas Nelson Page (Scribners). The treatment here is much more subjective, and consequently not so judicial, but Lee's life is treated as part of a social condition, and the biography is animated by sympathy and complete understanding.

The Life of George Cabot Lodge, by Henry Adams (Houghton Mifflin Co.), is a very sympathetic and a quite authoritative life of the poet whose untimely death cut off the promise of great achievement. The chronicle of Lodge's development is admirably treated.

The True Daniel Webster, by Sydney George Fisher (Lippincott), is told in an unpretentious, chatty style, and with an apparently thorough knowledge of Webster's life. Though a bit diffuse in places, it will undoubtedly become one of the standard lives of Webster.

Under the Old Flag, by James Harrison Wilson (Appleton), is an autobiography of an experienced soldier in the Civil War, the Spanish War and the Boxer Uprising in China. All the operations of these armies are viewed through General Wilson's eyes, and the result is a very interesting and valuable personal account.

The Promised Land, by Mary Antin (Houghton Mifflin Co.), is an interesting if somewhat too detailed account of the life of a girl of Russian-Jewish stock, both in Russia, and in this country. The book is

chiefly of importance as an argument for democracy and for the organization of American society.

Essays and Addresses.—*Humanly Speaking*, by Samuel McChord Crothers (Houghton Mifflin Co.), is another volume of the series which has made its author one of our foremost essayists. For keen wit, clarity of vision, surety of poise, and broad human sympathy, such essays as these are not surpassed in English or American literature to-day.

Democracy and Poetry, by Francis B. Gummere (Houghton Mifflin Co.), in the distinction of the style and the broad, non-technical attitude of the writer falls clearly within the domain of creative literature. It is a sane yet enthusiastic plea for intelligent constructive democracy.

American Addresses, by Joseph H. Choate (Century), forms the most notable collection of its kind in recent years. Here are grouped together a series of addresses delivered from 1864 to 1911, upon momentous political occasions, important educational gatherings, or other celebrations of like character. Those who have heard Mr. Choate speak will be glad to have preserved the best of the production of one of our really great orators.

Travel and Description.—In *From Constantinople to the Home of Omar Khayyam*, by A. V. Williams Jackson (Macmillan), we have combined the methods of the scholarly investigator and the entertaining narrator of travels. The result is a charming book, in which the historical and personal elements are more emphasized than the political.

Italian Castles and Country Seats, by Tryphosa Bates Batcheller (Longmans Green & Co.), is a series of letters, presenting a pleasant chatty account of social Italy, with a background of history, by one who has had large opportunities to become acquainted with her material. The illustrations are not by any means of the usual kind, but represent the more intimate side of Italian life very satisfactorily.

The Floving Road, by Casper Whitney (Lippincott), is a valuable record of travel in South America, mainly on the Orinoco and the Rio

Negro. There is a constant spice of danger in the account of the winter's journey through a country about which even yet there is a great deal of misrepresentation.

Footprints of Famous Americans in Paris, by John Joseph Conway (John Lane), is an interesting compilation of facts concerning Franklin, Jefferson, Tom Paine, Longfellow and other famous Americans. The best sketches are those dealing with the less well known men.

A rather unusual book is *European Years, the Letters of an Idle Man*, edited by George E. Woodberry (Houghton Mifflin). Here are reprinted letters from a Bostonian, living abroad, from 1876-1905, containing not only descriptions of places, but also comments upon politics and society, which have now an historical as well as an absolute interest.

Nature Books.—*The Lure of the Garden*, by Hildegarde Hawthorne (Century Co.), bids fair to become a classic for garden lovers. The distinctive note of the work is a social one; the chapter on "Our Grandmothers' Gardens" reveals a nice feeling for the distinction between the Northern and Southern attitude toward the garden. The illustrations by Parrish and others add greatly to the charm of the book.

More philosophical is *Time and Change*, by John Burroughs (Houghton Mifflin Co.). Here the nature lover will find topics such as scientific faith, evolution, the great ice

sheet of the North, the formation of the Yosemite Valley, and other themes, both abstract and concrete, treated in an attractive way. The preface contains an apology for the "hard science" discussed in the book, but the science is really not very difficult; as a matter of fact, it is a bit obvious.

Moths of the Limberlost, by Gene Stratton Porter (Doubleday, Page & Co.), is a fascinating study of moth life in that district of Indiana which the writer has made her own. In the opening chapter she draws a distinction between a nature lover and a naturalist, and it is as one of the former that she writes.

Anthologies and Literary Histories.—*Yale Book of American Verse*, by Thomas R. Lounsbury (Yale Univ. Press). The charmingly written Introduction, "A Word about Anthologies," justifies the publication of this volume, but the specifically trained student of American literature must regretfully refuse to recommend it as a guide to what is best in our poetry. An anthology which omits all of Longfellow's sonnets, all of Field's child verse, and leaves out George Cabot Lodge altogether, dismisses itself from serious consideration as an authority.

History of American Literature, by William B. Cairns (Oxford Univ. Press), is another attempt at a history of our literature that proceeds along conventional lines and adds no fresh viewpoint.

JOURNALISM

GERHARD R. LOMER

The Pulitzer Foundation.—The School of Journalism of Columbia University, founded by the benefaction of the late Joseph Pulitzer (d. 29 Oct., 1911), proprietor of the New York *World* and the St. Louis *Post-Dispatch*, was opened in September. In an article in the *North American Review* for May, 1904, Pulitzer stated the aim of the foundation to be "to make better journalists, who will make better newspapers, which will better serve the public." In this will, dated April 16, 1904, he expressed

the purpose of this gift more explicitly as "to assist in attracting to the profession [of journalism] young men of character and ability and also those already engaged in the profession to acquire the highest moral and intellectual training." To realize this ideal, Pulitzer gave to the trustees of Columbia one million dollars in 1904, and made provision for the gift of another million if at any time within seven years after his death the School shall have been in successful operation for three years.

He also arranged for three annual traveling scholarships of \$1,500 each for graduates of the school.

The School of Journalism will occupy eventually a special building on the University grounds, which is now in process of construction and which is expected to be ready in September, 1913. The administration of the School is vested in an advisory board consisting of Samuel Bowles, *Springfield Republican*; Nicholas Murray Butler, Columbia University; John Langdon Heaton, *New York World*; George S. Johns, *St. Louis Post-Dispatch*; Victor Freemont Lawson, *Chicago Daily Tribune*; St. Clair McKelway, *Brooklyn Eagle*; Charles Ransom Miller, *New York Times*; Edward Page Mitchell, the *Sun*, New York; Ralph Pulitzer, the *New York World*; Whitelaw Reid (chairman), New York; Melville Elijah Stone, Associated Press, New York; Charles H. Taylor, *Boston Globe*; Samuel Calvin Wells, *Philadelphia Press*. The director of the School is Talcott Williams, formerly editorial writer of the *Philadelphia Press*. There is a teaching staff of 25 members.

The course of study covers four years and leads to the degree of B. Lit. Candidates for admission must be at least 17 years of age and must present a certificate of good moral character or of honorable dismissal from some other institution. Specially qualified students are admitted to advanced standing. In 1912 the school had a grand total of 104 students, of which 59 were matriculated, 22 non-matriculated, and 23 registered in Columbia College. The distribution by years was: 61 first year; 15 second year; 14 third year; and 14 fourth year. Twenty-one states and one foreign country are represented.

The First National Newspaper Conference.—The first National Newspaper Conference in the United States, suggested by newspaper men, was held in Madison, Wis., July 29-Aug. 1, 1912, under the auspices of the Extension Division of the University of Wisconsin. The general question under consideration was: "Are newspaper and magazine writers free to tell the truth? If not, why not, and what can be done about it?"

The Conference grew out of an impromptu discussion on journalism which took place in October, 1911, at one of the meetings of the "Conference on Social and Civic Center Development" then in session in Madison. The widespread interest that has been shown in this first Newspaper Conference has led those who had charge of it to the belief that it should be permanently established as an annual convention.

The meetings were largely attended by the newspaper men of Wisconsin, but the programme included the names of journalists of national reputation. Newspapers, magazines and press agencies were all represented, and a good deal of difference of opinion was expressed in the answers which the various speakers gave to the question before the Conference, both in the formal papers and in the informal discussion.

Underlying all the discussion was the question, first, whether the Press at the present time is serving its own ends, the public good, or unseen interests; and, second, whether the Press has a definite function to perform and special duty to fulfill with regard to the education and the leadership of public opinion. Particular aspects of the problem involved, such as the following, called for separate discussion: Is the public getting all the truth to which it is entitled? Can the impartiality of the news agencies be fairly challenged? How is news service affected by the cost of the plant, by advertising, and by the non-journalistic interests of the capitalistic owner? Can the newspaper be regarded merely as a business proposition, if it is to be a factor in social amelioration? Can commercial journalism justify itself, or must there eventually be endowed or public newspapers?

The speakers also considered the necessity of some definite study of newspapers with a view to determining the relative amount of space devoted to desirable and to undesirable news. While some accused the papers of unreliability and of unjust discrimination in the publication of news, other speakers, especially those representing the better known and more conservative journals, em-

phasized the constant and careful effort made by the newspapers to secure and to publish the truth, and to keep continually in mind the public welfare and not any private interest.

Federal Control of Newspapers.—Legislation attached to the Post Office Appropriation bill, signed by the President Aug. 24, attempts, in the opinion of the newspapers, to establish a censorship of journalism under pretense of regulating the carriage of the mails. It is provided:

That it shall be the duty of the editor, publisher, business manager, or owners of every newspaper, magazine, periodical, or other publication to file with the Postmaster-General and the Postmaster at the office at which said publication is entered, not later than the first day of April and the first day of October of each year, on blanks furnished by the Post Office Department, a sworn statement setting forth the names and Post Office addresses of the editor and managing editor, publisher, business manager, and owners, and in addition the stockholders, if the publication be owned by a corporation, and also the names of known bondholders, mortgagees, or other security holders; and also, in the case of daily newspapers, there shall be included in such statements the average number of copies of each issue of such publication sold or distributed to paid subscribers during the preceding six months.

A copy of such sworn statement shall be published in the second issue of such newspaper, magazine, or other publication printed next after the filing of such statement. Any such publication shall be denied the privileges of the mail if it shall fail to comply with the provisions of this paragraph within ten days after notice by registered letter of such failure.

That all editorial or other reading matter published in any such newspaper, magazine or periodical for the publication of which money or other valuable consideration is paid, accepted, or promised, shall be plainly marked "advertisement." Any editor or publisher printing editorial or other reading matter for which compensation is paid, ac-

cepted, or promised, without so marking the same, shall upon conviction in any court having jurisdiction be fined not less than fifty dollars (\$50) nor more than five hundred dollars (\$500).

A suit to test the constitutionality of the law, endorsed by the American Newspaper Publishers' Association, was begun in New York early in October by the Journal of Commerce and Commercial Bulletin Co., publishers of the *Journal of Commerce*. Frank Hitchcock, Postmaster General, George W. Wickersham, Attorney General, Edward M. Morgan, Postmaster at New York, and Henry S. Wise, Federal District Attorney at New York, were named as defendants. It was charged in the complaint that the legislation was void, being in conflict with the First and Fifth Amendments to the Constitution of the United States, and an order was asked restraining the defendants from attempting to enforce it. The trial of the suit was expedited in every possible way. Judge Learned Hand, of the U. S. District Court at New York, on Oct. 15, sustained a demurrer filed on behalf of the Government and dismissed the petition of the complainant, granting the complainant an appeal from his order. Similar action was taken on Oct. 17 in a second suit filed by the Lewis Publishing Co., New York, publishers of the *Morning Telegraph*. The cases thus advanced to the docket of the U. S. Supreme Court, before which they were argued Dec. 2, but no decision had been announced at the end of the year. On Dec. 14, a bill amending the law was introduced in the House, which provides that newspapers shall file a statement showing the names of officers and owners, but not requiring the names of stockholders owning less than 5 per cent. of the stock. The requirements for statements of indebtedness and circulation and for the labeling as "advertisement" of paid reading matter are eliminated.

XXXIV. EDUCATION AND EDUCATIONAL INSTITUTIONS

ANNA TOLMAN SMITH

ACTIVITIES OF THE FEDERAL GOVERNMENT

Appropriations.—The appropriations by Congress for educational purposes for the current year amounted in round numbers to \$15,750,000. The education of the Indians absorbed \$4,884,000 of this total and agricultural education and research \$4,092,500. The latter sum included \$2,500,000, the continuing appropriation for colleges of agriculture and the mechanic arts, and \$1,592,500 for experiment stations (see also XIX, *Agriculture*). For education in the District of Columbia, Congress allowed \$3,427,000, which was made up of appropriations for special institutions, plus one-half the cost of the public schools, \$2,434,000, the other half being borne by the tax payers of the District. The playground association managed, with much difficulty, to secure \$15,800. The amount credited to the District does not include the appropriation for the Columbia Institution for the Deaf, the appropriation for Howard University, nor the \$689,000 appropriated for the Library of Congress.

The Bureau of Education.—The appropriation for the Bureau of Education for the year ending June 30, 1911, was \$80,000. An additional

sum of \$9,000 was allowed for the current fiscal year, to be expended in field service in the continued conduct of the investigation into rural and industrial education, school hygiene and sanitation authorized by Congress in the session of 1910-11. Entirely separate from the general appropriation are those allowed for the education of the natives of Alaska, \$200,000, and for the reindeer service, \$12,000, which are disbursed under the direction of the Commissioner of Education.

Federal Legislation.—The principal measures passed by Congress in the session of 1911-12 having a bearing upon education were the Act establishing a Children's Bureau in the Department of Commerce and Labor (see XVIII, *Child Welfare*) and the appropriation of \$50,000 for the International Congress of Hygiene and Demography (see XXX, *Public Health and Hygiene*). The work of the Children's Bureau is foreshadowed by the activities of the Child Labor Committee, to whose persistent efforts its creation is largely due; the field is different from that covered by the Bureau of Education, but the two will supplement each other at many points.

GENERAL STATISTICS OF EDUCATION

The total population of the United States, according to the census of 1910, was 91,972,266. If the rate of increase for the ten years preceding has since been maintained, the present population is, in round numbers, 95,000,000. Of this total, approximately 22,000,000 attended schools or

higher institutions during the year. Elementary schools enrolled 92.5 per cent. of the number, secondary schools 6 per cent., and higher institutions 1.5 per cent.

Expenditures.—The entire expenditure for education by public and private agencies was about \$680,000,-

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000. It is difficult to show the relative expenditure, since no other country attempts, at present, to give even an approximate statement of the total expenditure for all classes of schools, private and public, lower and higher.

Distribution of Students.—The analyzed statistics for the scholastic year 1910-11, showing distribution of students, indicate, at a glance, the magnitude of the nation's educational work and the many forms which it assumes:

GENERAL EDUCATION	NUMBER OF PUPILS		
	Public Schools	Private Schools	Total
Elementary (kindergarten, primary, and grammar).....	16,898,791	1,441,037	18,339,828
Secondary (high schools and academies).....	915,061	117,400	1,032,461
Secondary (preparatory departments of higher institutions).....	23,376	75,629	99,005
Universities and colleges.....	67,626	117,086	184,712
Professional.....	12,541	54,814	67,355
Normal, or training of teachers.....	79,546	9,015	88,561
Total for the above.....	17,996,941	1,814,981	19,811,922

To this total should be added 374,364 pupils in public evening schools, and 134,778 in private business schools, many of which are evening classes; also private kindergartens with 110,000 pupils, and miscellaneous art, and music schools, etc., with 55,000 pupils.

Schools for Special Classes.—These include public reform schools, pupils, 42,381; schools for defectives,

pupils, 24,346; Government Indian schools, enrollment, 37,883; Government schools for native Alaskans, enrollment, 3,964; municipal schools in Alaska, enrolling 4,700 pupils; private orphan asylums, 17,000 pupils; making a total in schools for special classes of 130,274 pupils. The grand total of pupils is 20,616,338, of whom 89.5 per cent. were in schools supported by public funds.

ELEMENTARY EDUCATION

THE PUBLIC SCHOOL SYSTEM

The Census of 1910.—In a broad view of the public welfare, the chief interest of the education statistics annually collected by the federal Bureau, and reinforced every ten years by collaboration with the census, centers in what are termed the common schools of the country, the public schools, common to all because supported by the taxes of all the people, and maintained by their united efforts and ever watchful care. The census of 1910, portions of which have been recently published, brings the analyses of population through 1910, and the Bureau of Education has followed the same course with the educational statistics, thereby completing the story of a decade. In this dual survey, the public-school work of the country stands out clearly, both in its magnitude and its deficiency.

Enrollment.—The analyzed statistics for 1910 show an enrollment in the public schools of 17,813,852 children. This total was 71.3 per cent. of the population five to 18 years of age, a proportion which has undoubtedly increased in the current year. The age period, five to 18 years, has been adopted as representing the school population of the country, because the legal school age varies so greatly in the different states. The use of the period indicated is, however, misleading. It has given color to the idea that 30 per cent. of the nation's children do not attend school. It is important, therefore, to consider the meaning of this measure of school population. It does not stand for the number of children and youth who ought to be in school at any given time; but the number to whom educational facilities of one kind or another should be extended. In other words, it ex-

presses the American idea of the formative period of a people for whose care and nurture the public should hold itself responsible. The entire country has not measured up to the standard, but is steadily reaching toward it, as is shown by the extended period of legal school age which exceeds the period five to 18 years of age in thirty states. It is worth noting that the normal school population in foreign countries is generally reckoned for the ages six to 13; where it exceeds this limit, as in some German states and a few Swiss cantons, a period of nine years is the extent. Judged by universal

standards, therefore, the normal school population of the United States would be more exactly defined by the age limits seven to 14, inclusive, which is the period of compulsory school attendance in the states that take the lead in education. On this basis, the school population for 1910 was 15,515,000, which was greatly exceeded by the public-school enrollment alone.

Enrollment in Each Grade.—The following table covering the two decades 1890 to 1910, inclusive, shows the movement of the school population in respect to the different grades and classes of schools:

YEAR	Total Pupils	Per cent. in each grade receiving public instruction			Per cent. of the total population enrolled in each grade			
		Elementary	Secondary	Higher	Elementary	Secondary	Higher	Total
1890.....	14,112,778	91.80	60.36	32.09	21.73	0.59	0.22	22.54
1900.....	17,020,710	92.27	73.75	38.17	21.34	.96	.31	22.61
1910.....	19,811,922	92.14	82.94	46.89	19.94	1.23	.37	21.54

In the two decades considered, there was a noticeable decline in the relative enrollment in elementary schools, and a corresponding increase in the relative enrollment in secondary and higher institutions. The decrease in the proportion of the total population enrolled does not indicate that the schools have lost ground in the decade. It is in fact an apparent decrease only, resulting partly from the improvement in statistical methods, and partly from an actual decrease in the ratio which the child population of the country bears to the total population.

A striking fact brought out in the comparison of 1890 with 1910 is the extension of public control in the province of secondary and higher education.

Teachers, Property, and Expenditures.—The magnitude of the public-school work is indicated also by the army of teachers employed, which increased in numbers from 363,922 to 563,210, or 43 per cent. in two decades, and by the value of school property, which passed the billion mark in 1910, having doubled in a single decade. The value is estimated at present in round numbers as

\$1,100,000,000. The annual cost of this system is increasing by leaps and bounds. It amounted to \$215,000,000 in 1900; in 1910 to \$426,250,000, and as the rate of increase has been fully maintained, at least \$447,000,000 went to the expenditure on public schools the current year.

Inequalities in Enrollment.—These large aggregates conceal many inequalities in the school provision of the country due to the unequal distribution of the population and the prevailing industries in the different sections. This relation is disclosed in a series of tables compiled by the statistician of the Bureau of Education, from which the summaries on the next page are drawn.

Education in the South.—The low ratio of school enrollment to school population in the Southern Division is noticeable, and also the fact that the ratio to total population is highest in this division. In other words, considering population alone, the adult bears in the southern states a heavier school burden than in the rest of the country. This fact is emphasized by the character of the population. It is sparse as compared with other divisions, 75 per

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POPULATION STATISTICS, BY GEOGRAPHICAL DIVISIONS, FOR 1910

DIVISIONS	Total population	Urban population	Per cent. of total	Rural population	Per cent. of total	Estimated population, 5 to 18
United States.....	91,972,266	42,623,383	46.3	49,348,883	53.7	25,016,501
North Atlantic.....	25,868,573	19,178,718	74.0	6,689,855	26.0	6,029,583
North Central.....	26,595,207	12,092,170	45.5	14,503,037	54.5	7,066,128
Southern ¹	32,682,665	8,022,655	24.6	24,660,010	75.4	10,282,039
Western.....	6,825,821	3,329,840	48.7	3,495,981	51.3	1,638,750

¹ Missouri included in the Southern Division in this and subsequent tables.

ENROLLMENT IN THE COMMON SCHOOLS, 1910

DIVISIONS	Different pupils enrolled		Total	Per cent. of school population (5 to 18) enrolled	Per cent. of total population enrolled	Pupils enrolled in private schools
	Male	Female				
United States.....	8,971,875	8,841,977	17,813,852	71.30	19.38	1,558,437
North Atlantic.....	2,136,173	2,080,706	4,216,879	69.93	16.31	698,000
North Central.....	2,669,734	2,605,224	5,274,958	74.65	19.83	498,025
Southern.....	3,536,692	3,557,714	7,094,406	69.00	21.71	281,791
Western.....	629,276	598,333	1,227,609	74.70	18.04	80,621

cent. rural and more than one-fourth negro. These conditions explain the low position of the South in respect to the following items which measure the efficiency of a school system:

AVERAGE DAILY ATTENDANCE, LENGTH OF SCHOOL TERM, ETC., 1910

DIVISIONS	Average daily attendance	Per cent. based on enrollment	Aggregate number of days attended by all pupils	Average length of school term in days	Average number of days attended by each pupil enrolled	Average number of days attended by each child 5 to 18
United States....	12,827,307	72.1	2,011,477,065	157.5	113.0	80.5
North Atlantic.....	3,310,279	78.5	595,708,282	180.2	141.2	99.0
North Central.....	3,973,525	75.3	660,625,747	166.3	125.2	93.5
Southern.....	4,646,312	65.5	608,969,409	131.1	85.8	59.2
Western.....	897,191	73.0	146,173,627	163.2	119.1	89.4

TEACHERS, PROPERTY, EXPENDITURES, ETC., 1910

DIVISIONS	Total teachers	Per cent. of men teachers	Total average monthly salaries	Buildings used as school-houses	Total payments, excluding payments of bonds	Expenditure		Average daily expenditure per pupil	
						Per capita of total population	Total per pupil	For salaries only	Total
United States.	523,210	21.1	\$61.70	256,474	\$126,250,434	\$4.64	\$33.23	Cents 12.6	Cents 21.1
North Atlantic	129,380	14.0	67.82	44,432	143,185,086	5.53	43.25	14.3	24.0
North Central	187,981	18.6	57.30	99,952	151,966,432	5.71	38.24	13.1	23.0
Southern.....	166,883	30.3	48.91	103,845	81,466,673	2.49	17.53	9.1	13.4
Western.....	38,966	17.9	70.62	17,245	49,632,243	7.27	55.32	18.6	33.9

Illiteracy.—The census of 1870 revealed an alarming degree of illiteracy among the masses of the people, and the Government suddenly awoke to the idea that this was a national disgrace and menace. The Bureau of Education, then in its infancy, was charged to report the full extent of the provision for popular education as a first step toward eliminating the evil. This report has been made every year since. Once in ten years the census furnishes a measure of the success of the endeavor to overcome ignorance. In 1870, 20 per cent. of the population ten years of age and over were illiterate; by 1900 this ratio had fallen to 10.7 per cent.; and in 1910 to 7.7 per cent. This is progress; but the relative position of the United States among the nations has not been changed; it still stands ninth in the list, although nearer the highest than it was ten years ago. If the native white population alone be considered, however, the United States stands at the eighth position in the scale, having only 3 per cent. of illiterates in the population 10 years of age and over. (See also XV, *Problems of Population*.)

In spite of unfavorable conditions the South has borne its part in the general progress. In the decade 1900 to 1910 its school expenditure increased by 126 per cent., while the increase of its population was only 18 per cent.

Rural School Problems.—For 20 years the Bureau of Education has annually collected reports from cities and villages of 4,000 population and over and thus it is possible to compare the school provision of urban and rural communities. The comparison is not exact at all points, but close enough to show where the forces of progress are most needed. Notwithstanding the constant drift of population to cities, the rural schools still provide the means of education for the great majority of the people. At the same time, the rural schools have but little more money for the service of two-thirds the children than is expended for the other one-third. In 1910, the latest year for which the data are complete, the cost of the rural schools was \$214,743,-

379, against \$211,106,299 for schools in the cities and large villages. The annual expenditure per capita of average attendance in the city schools is \$46, in the rural schools \$20. The greater cost of grounds and buildings in the cities would account for part of this difference; but if the expenditure for these purposes be omitted from the total for cities, the cost per pupil in average attendance is \$34, or \$14 more than the expenditure for the country pupil. This difference means, for the latter, inferior teachers, short school terms and miserable school buildings. The distinctions between teachers, the trained teacher of the city and the untrained and too often make-shift teacher of the country, are immeasurable; but the school year is a measurable quantity. The longest school year is in Rhode Island, where it reaches 193 days; the shortest is in New Mexico, where the average falls to 100 days. This single item marks a wide difference between city and country, in regard to school advantages. From the following table it will be seen that the longest average school year is in the division having the highest proportion of urban populations; and that even in this division the city school year exceeds in length the general average:

DIVISIONS	Average length of school term in days	
	Urban and rural	Urban only
North Atlantic.....	180.2	190.1
North Central.....	166.3	181.4
Southern.....	131.1	178.8
Western.....	163.2	184.9
United States.....	157.5	187.7

Even under these conditions the cost of instruction is higher per pupil in the ungraded rural school than in the graded schools.

Consolidated Schools.—The subject was considered by the state superintendents at their annual conference in St. Louis last February. Thus far, the most successful plan devised for the uplift of rural education is that of the consolidated school, which is now in operation to some extent in about two-thirds of the states. In the conference referred

to, State Commissioner Snedden of Massachusetts expressed the opinion that the problem would be practically solved if the rural-school teacher had to deal only with children 12 years of age and under, and all older children were transported to centers for the higher instruction. These conditions explain the stress which Dr. Claxton has placed upon rural education in his plans of work for the federal Bureau, his organization of a special division to deal with the subject, and his unflinching response to every appeal for his personal assistance in the great campaign which is being waged for the uplift of the country school. The most complete survey of the conditions of rural education that has ever been made in this country is now going on under the direction of Dr. Claxton and in the immediate charge of A. C. Monahan, field agent for this work.

Early Withdrawal from School.—Second only to the rural school problem as a subject of current interest is that of the early withdrawal of children from school. Some advance has been made in the correction of this tendency as shown by the fact that the average school term has increased within a decade by 12 days and the average number of days in a year, that each enrolled pupil attends school, by 13.6 days. In part, this result comes from the decrease in irregular school attendance, and in part from the increasing number of pupils who go on to the high schools. This contingent reaches now one-fourth of all the pupils who enter at any given time; but fully one-half the pupils quit school altogether by the time they complete their twelfth year of age. How to retain the pupils beyond that age and to make the two years 13 and 14 of greater profit to them are questions of the hour. The investigations carried out under the direction of Superintendent Maxwell, during the last two years, into the causes of retardation and early withdrawal in New York City, place the responsibility in a measure upon the schools themselves. The more complete investigations of the school system of New York City, carried on the present year by a committee of experts.

will, it is expected, result in important measures for the closer adaptations of the course of instruction to the critical period here considered.

URBAN SCHOOL SYSTEMS

Statistics.—The Bureau of Education receives reports from some 680 cities of 8,000 population and over, and from 670 cities and villages of 4,000 to 8,000 population. These urban communities have an enrollment (in round numbers) of 5,900,000 children in public schools. The daily average attendance is 4,690,000 or 79½ per cent. of the enrollment. Parochial and other private schools enroll 1,250,000 children, which makes very nearly 6,000,000 children under instruction in cities and large villages.

The review of the decade 1900 to 1910 shows great progress in the cities having 8,000 population and more, in respect to regularity of attendance; *per capita* expenditure, which rose from \$33.78 per pupil to \$48.92; and supervisory force, which for the cities reporting was equivalent in 1900 to one supervisor for every 17 teachers, and in 1910 to one for every 11 teachers. In 1900, public kindergartens were reported in 250 cities; in the decade the number increased to 400 cities. To the phenomenal increase in the number of public high schools, urban and rural communities contributed equally.

The excessive proportion of the larger cities in the North Atlantic and North Central divisions of the country is indicated by the following distribution of enrollment and expenditure for public day schools as reported in 1910:

GEOGRAPHICAL DIVISIONS	Enrollment in public day schools	Total expenditure out of funds available for the year
United States....	5,056,798	\$192,825,699
North Atlantic.....	2,407,259	94,175,833
South Atlantic.....	332,304	7,989,700
South Central.....	344,254	9,840,271
North Central.....	1,593,869	61,423,709
Western.....	379,112	19,396,187

Problems.—The annual conferences of city superintendents have brought

about a high degree of uniformity in the workings of the systems under their charge and emphasis upon the same problems. Chief among the latter are the means of promoting economy in the use of the large sums annually disbursed for the schools, and of promoting the progress of the individual pupil so that the brighter children shall not be kept marking time, nor the average children reduced to the slow pace of the dullard. The movement for vocational training has spread to all cities and a few cities have worked out provisional plans in this respect, which carry promise of permanency (see XVI, *Vocational Efficiency*).

Medical Inspection and School Hygiene.—Medical inspection of schools is maintained in 443 cities out of a total of 1,038 reporting on the sub-

ject. Of the entire number, 236 are in the North Atlantic states and 109 in the North Central states. The inspection varies in scope from the mere endeavor to detect and isolate cases of contagious diseases to the periodical examination of all children. The general procedure in cases of physical ailments is to notify parents; but in several cities clinics are established for the free treatment of children whose parents are unable to provide proper medical attention. School nurses are employed in a number of cities to follow up the work of the examining physician by visitation of homes and coöperation with both school authorities and parents. The spread of hygienic measures in city schools is indicated by the following summary of results from a recent investigation:

PROVISIONS FOR HEALTH OF CHILDREN IN PUBLIC SCHOOLS

DIVISIONS	Number of cities reporting	Having medical inspection	Inspection for contagious diseases	Vision and hearing tests by teachers	Vision and hearing tests by doctors	Physical examination by doctors	System under board of health	System under board of education	Number of school doctors	Number of school nurses	Inspection by dentists
United States....	1,038	443	405	552	258	214	106	337	1,415	415	69
North Atlantic.....	411	236	224	261	125	135	58	178	852	261	24
South Atlantic.....	74	23	23	29	12	10	7	16	48	11	8
South Central.....	101	35	34	43	23	12	12	23	41	5	3
North Central.....	382	109	93	182	73	38	21	88	417	114	30
Western.....	70	40	31	37	25	19	8	32	57	24	4

Provision for Exceptional Children.—The following table shows the present status of the provision for exceptional children of various classes in the urban school systems of the country:

PROVISION FOR EXCEPTIONAL CHILDREN

DIVISIONS	Number of cities reporting	Delinquent	Backward	Defective	Blind or semi-blind	Deaf or semi-deaf	Open-air	Schools for foreigners		Vocational	Continuation	For late-entering children	For gifted children	Special-help teacher
								Day	Night					
United States	898	121	207	94	14	46	25	73	197	136	36	75	54	13
North Atlantic..	370	56	90	43	4	6	12	41	122	48	12	26	22	7
South Atlantic..	60	5	14	12	.....	.....	1	1	4	10	2	6	2	1
South Central..	90	10	18	7	.....	.....	1	4	8	13	6	7	3	.....
North Central..	322	38	66	30	9	34	9	16	53	55	14	27	19	4
Western.....	56	12	19	12	1	6	2	11	10	10	2	9	8	1

In addition to the above, 24 cities maintain parental or residential schools for epileptics; two, schools for stammerers, and three, schools for schools for refractory children; five, crippled children.

The close relation between school hygiene and the medical inspection of school children and the auxiliary services growing out of the two was emphasized during the year by the exhibition maintained in connection with the fifteenth International Congress of Hygiene and Demography held at Washington in September (see XXX, *Public Health and Hygiene*). Among the subjects included in the division of "hygiene of instruction" were methods and results of fatigue tests as a means of determining individual and sex differences in their relation to mental strain; also writing and drawing as affecting eyesight. The cities that made large contributions to this concrete illustration of one of the greatest movements that has grown out of scientific research were: Boston, Denver, New York, Philadelphia, Cleveland, Cincinnati, Chicago, St. Louis, San Francisco and Los Angeles. The exhibition itself and the discussions in the Congress indicated in various ways the inseparable relation between school hygiene and medical inspection and further the very close relation of these services to the entire field of municipal hygiene and sanitation.

Vocational Education.—The rural uplift movement centers in the district school, because this is the one agent that touches every home in a community and consequently is the natural rallying place for every other interest of community life. The movement for vocational education pertains more directly to the cities, but it also centers in the school as the one agency by which the industrial aptitudes of the young may be utilized for their highest development. The urgent need in this direction is indicated by the large percentage of children who do not profit by things of the mind, and the number who seek in evening schools to get some adequate training for industrial pursuits. In 230 cities of 8,000 inhabitants and upward, 38,000 young people were enrolled this year in evening vocational classes; of these nearly 31,000 in the North Atlantic states.

In various ways day schools are responding to the new demands. At

least 700 cities of the United States have manual training in the elementary schools, and there are 425 high schools in the country, including the manual-training high schools, which reported during the year 20 or more students in manual or technical-training courses. The total of such students was 43,126 (27,127 boys and 15,948 girls).

Among the many commissions and committees that have been working at this problem during the past decade, the committee on industrial education of the American Federation of Labor stands easily first; their report, issued as a Senate document the present year, is the most significant contribution that has been made to the literature of the subject. The committee hold that the time is ripe for a constructive policy in education directed to industrial interests as the existing schools are directed to commercial and professional life. Their report itself is constructive in the sense of defining the principles and indicating the agencies of such a system; it also presents a very full account of existing trade schools in this country with discriminating judgment as to their relative merits.

Types of all the classes of schools recommended by this committee are in operation in the United States. They fall as regards support into two classes; schools maintained by private managers, and public trade schools. Among the latter are co-operative part-time schools, that is, schools conducted for the instruction of apprentices under an agreement between the public-school authorities and the employing establishments. This plan is in operation in six cities of the United States, as shown in the table on the next page.

Under the law of 1906 providing for joint action of the state and local authorities in the support of vocational schools, Massachusetts now has 40 state-aided schools with a registration of nearly 7,000 persons, in day and evening classes, fitting for 50 different occupations. The expenditure for this work last year was \$180,000, of which the state contributed \$72,000.

The Wisconsin law providing for a system of industrial and commercial

COÖPERATIVE HALF-TIME SCHOOLS

NAME AND LOCATION OF SCHOOL	Year of establishment	Minimum age for entrance	Years in course	Weeks of school in year	Hours of school attendance per week	Pupils entering must have passed	Number of pupils in course
Fitchburg High School, Fitchburg, Mass.....	1908	16	4	20	23½	Grammar school	80
Beverly-United Shoe Machinery Co., Beverly, Mass.....	1909	14	2	25	38½	Sixth grade	66
Technical High School, Providence, R. I.....	1910	14	4	20	23½	Grammar school	42
Freeport High School, Freeport, Ill.....	1909	15	4	20	26½	do	25
Lewis Institute, Chicago, Ill.....	1909	16	2	24	40	do	68
Cincinnati High School, Cincinnati, Ohio.....	1910	16	4	48	24	Eighth grade	175

In the schools in Fitchburg, Mass., Providence, R. I., and Freeport, Ill., the first year of the course is spent entirely in the school, the remaining three years are devoted to the half-time plan.

continuation schools went into operation during the year. It is modeled pretty closely upon the German system and not only makes public provision for the schools, but obliges the employers of minors between the ages of 14 and 16 to grant them five hours a week without reduction of pay for attendance upon the continuation schools.

Under a law passed by the legislature of New York in 1908, the state annually contributes money in aid of local vocational schools, the amount received by each depending upon length of school session and

number of teachers. The law was extended the present year to include schools of agriculture. The industrial and trade schools, already established, number 35, with 145 teachers, 3,370 day pupils and 2,933 evening pupils. Instruction in manual arts is increasing; in the state, outside New York City, 199 teachers were engaged during the current year in teaching 17,113 girls domestic arts, and 68 teachers in conducting other forms of manual training with classes comprising 13,320 pupils. (See also XVI, *Vocational Efficiency*.)

SECONDARY EDUCATION

Statistics of High Schools.—In respect to numerical increase most striking progress during the last decade is disclosed in the record of high schools. For two decades, indeed, the rate of increase for students in the secondary grade of instruction has been greater than the rate of increase in population. The percentage of increase in the population from 1890 to 1910 was nearly 47, while the enrollment of secondary schools increased by 208 per cent. In 1905 the proportion of such students was 10,600 to every million of the population; in 1911 it was 13,100 to the million.

The actual number of students in all secondary schools and departments has not been computed for the

present school year, but all reports indicate that the total will reach at least 1,250,000. For the previous year the total was 1,131,466, of which number 938,437 were in public high schools, 193,029 in private high schools, and the remainder in the preparatory departments of normal schools and colleges.

The increase in the numbers of public high schools has been accompanied by an extension of the course of study in the case of many schools which originally offered only a two years' course. Of 10,234 high schools reporting during the year, 6,732, or 65.7 per cent., were schools having four years in the course; schools of this high grade enrolled above 88 per cent. of the secondary students.

XXXIV. EDUCATION AND EDUCATIONAL INSTITUTIONS

It is noticeable, also, that the high schools draw their pupils from a much more extended circle than formerly; fully 25 per cent. of white children in the grade schools enter the high schools, and the proportion is still large, 22 per cent., if the colored children are included. Although private schools are increasing in number and patronage, the public high schools far exceed them in progress. In 1890 out of every hundred high schools 40 were private; at present private schools number only 16 in every hundred. As to the distribution of students, in 1890, 32 per cent. were in private schools; 68 per cent. in public schools; in 1911, only

12 per cent. of secondary pupils were in private schools, against 88 per cent. in the public high schools. The entire country has shared in the progress here noted. At present at least 9,400 high schools are found outside the cities having 8,000 inhabitants and more. At the same time it should be stated that the high schools in cities of the class named register nearly half (47 per cent.) of the total students.

Provision for Secondary Education.—A general view of the distribution of the provision for secondary education throughout the country is offered by the following summary:

PUBLIC HIGH SCHOOLS

GEOGRAPHICAL DIVISIONS	Number	Secondary instructors			Secondary students		
		Men	Women	Total	Boys	Girls	Total
United States.....	10,234	20,152	25,015	45,167	433,053	551,624	984,677
North Atlantic.....	2,190	5,331	7,793	13,124	139,182	171,874	311,056
South Atlantic.....	1,107	1,806	1,694	3,500	27,635	38,483	66,118
South Central.....	1,406	2,380	2,201	4,581	40,872	56,426	97,298
North Central.....	4,768	8,746	10,688	19,434	180,302	230,169	410,471
Western.....	763	2,089	2,639	4,728	45,062	54,672	99,734

PRIVATE HIGH SCHOOLS

GEOGRAPHICAL DIVISIONS	Number	Secondary instructors			Secondary students		
		Men	Women	Total	Boys	Girls	Total
United States.....	1,979	4,986	7,087	12,073	61,298	69,351	130,649
North Atlantic.....	656	2,156	2,772	4,928	23,742	23,542	47,284
South Atlantic.....	301	678	873	1,551	9,525	10,305	19,830
South Central.....	361	747	906	1,653	11,271	11,176	22,447
North Central.....	486	980	1,833	2,813	11,975	17,195	29,170
Western.....	175	425	703	1,128	4,785	7,133	11,918

Of the entire number of students in public secondary schools, 920,758, 93.5 per cent. were in coeducation schools; of the entire number in private secondary schools, 66,246, 57 per cent.

Property and Revenues of High Schools.—As a rule city high schools are well equipped with libraries and scientific apparatus, are liberally supported, and every year shows increasing liberality toward the rural high schools. From the latest returns it appears that 8,647 high schools possessed buildings and grounds of the aggregate value of \$248,527,048; the scientific appa-

tus of 8,000 schools was valued at about \$16,400,000. The working incomes reported for 36 per cent. of the public high schools are given in the table on the next page. Of the total revenue of \$19,742,043, \$18,331,973, or nearly 93 per cent., it will be seen, was derived from public appropriations.

Private high schools, as the title indicates, derive their support from fees, endowments, and other private sources. Endowment funds to the value of \$25,926,792 are reported for 247 schools; 977 schools report an aggregate income from all sources of \$9,100,871.

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REVENUES OF PUBLIC HIGH SCHOOLS

GEOGRAPHICAL DIVISIONS	From public appropriations		Total income from all sources	
	Schools reporting	Amount	Schools reporting	Amount
United States.....	3,756	\$18,331,973	3,757	\$19,742,043
North Atlantic.....	828	4,993,659	829	5,477,614
South Atlantic.....	548	1,245,098	548	1,341,056
South Central.....	546	1,771,297	546	1,986,235
North Central.....	1,509	6,654,960	1,509	7,166,968
Western.....	325	3,666,959	325	3,770,170

Students Preparing for College.—

The importance of secondary schools as factors in developing the moral tone and intellectual force of a people gives special interest to statistics pertaining to the scholastic work of the schools. They show, as no particular statement can, by what in-

tellectual disciplines the picked youth of the country are being prepared for leadership in the affairs of common life. The following statistics present: (1) the work of the secondary schools considered as college preparatories; (2) the main direction of their work.

STUDENTS PURSUING COLLEGE PREPARATORY COURSES, 1911

GEOGRAPHICAL DIVISIONS	PUBLIC HIGH SCHOOLS					PRIVATE HIGH SCHOOLS AND ACADEMIES				
	Total number of students	Per cent. of total number			Per cent. of graduates prepared for college	Total number of students	Per cent. of total number			Per cent. of graduates prepared for college
		Classical preparatory students	Scientific preparatory students	Graduates in 1911			Classical preparatory students	Scientific preparatory students	Graduates in 1911	
United States..	984,677	2.99	2.67	12.18	34.50	130,649	10.29	6.96	12.60	40.87
North Atlantic...	311,056	4.32	3.88	11.90	27.53	47,284	14.77	10.66	15.89	46.19
South Atlantic...	66,118	2.83	1.30	10.50	45.07	19,830	9.34	4.97	9.21	46.88
South Central...	97,298	2.59	1.15	9.14	44.20	22,447	6.94	3.24	9.32	35.80
North Central....	410,471	2.08	2.00	13.78	34.45	29,170	7.55	5.55	12.44	31.57
Western.....	99,734	3.11	4.00	10.59	43.88	11,918	7.16	6.09	11.75	36.14

Students in Different Courses.—

The distribution of students between the main secondary courses, considering the entire country and both public and private secondary schools, is as follows:

Courses	Number of students
Academic	908,520
Commercial	122,881
Technical or manual training.	70,012
Training courses for teachers	19,926
Agricultural	22,230
Domestic economy	37,904

The comparative proportion of all students in the several courses cannot be determined on account of duplications and the incompleteness of the returns.

College Entrance Requirements.—

Among the many questions pertaining to secondary schools, their relation to the colleges continues to excite chief discussion, but it appears that the acute stage of the controversy has passed. In his current report Dr. Babcock, specialist in higher education in the federal Bureau, notes "the widening area in which prevails the system of accrediting high schools by institutions or state authority," so that their students enter higher institutions without examination. "In these regions," he says, "the bond of sympathy, understanding, and coordinate aims between the higher schools and the professional colleges on the one hand,

and the secondary schools on the other, grows stronger and more vital." The North Central Association of Colleges and Secondary Schools gives its chief consideration to the preparation of lists of accredited schools in the 13 states represented in the association. Several of the state universities have made very large concessions to the new subjects, even to the extent of recognizing vocational and industrial subjects in their admission requirements, but only in strict subordination to the fundamental subjects, or taught with special regard to preparation for technical courses which require manual skill.

The new schemes of admission adopted by the University of Chicago and Harvard University have passed this trial year with satisfactory results; while extending the area of student supply, by more flexible requirements, they have not depressed the admission standard.

Secondary Education in Massachusetts.—The question of college entrance requirements affects, however, but a small proportion of high school students, since, as the tabulated statistics show, even of the number who graduate from the full secondary course only 35 per cent. have prepared for college. The urgent need of the time is that of a well-devised system providing equally for the distinct classes of secondary students unhampered by the traditions of the past.

The most hopeful effort in this direction is reported from Massachusetts, where the first step has been taken toward framing a constructive policy on these broad lines. In accordance with this purpose, provision has been made for the supervision and aid of those small high schools which receive a pecuniary grant from the state and in which the state has naturally a special interest. At present there are 47 such schools, all in small towns with limited resources. They employ about 130 teachers, 47 men and 83 women. In 18 schools there are but two teachers, while 22 have three; six boast more than three. The problem to be solved by such a school is very difficult, and has been made harder by

the multiplication of studies in recent years. The staff is small, and necessarily the salaries are inadequate to attract and hold many teachers of marked ability, though there are exceptions. One of the reforms to which the state board has given special attention is the raising of the standards of instruction; a statute which went into effect July 1 requires that teachers in all state-aided schools shall hold a certificate issued by the board.

Not less important is the proposed revision of the course of study for the small high school. The principle of the revision, namely, simplification by the rejection of pretentious courses, is sound; but the details as announced by Commissioner Snedden in the last report of the board of education have raised much criticism. This, however, is counted as a help toward a final revision in the light of experience.

This series of preliminary measures is completed by the employment of a special agent of the state board to look after the interests of these state-aided high schools, study their problems, help their teachers, and advise as to the articulation of their courses of study with the general scheme of secondary and higher education. The incumbent of this new position is Clarence D. Kingsley, who has made an exhaustive study of college entrance requirements, the results of which have been published as a bulletin by the Bureau of Education.

Illinois.—The movement in Illinois, initiated by the State Bankers' Association for a revision of aims and methods, is proceeding in the same deliberate and comprehensive manner as the Massachusetts experiment. At a general state conference of those interested in the subject, a committee was appointed to draft a measure providing for a new type of school. The problem at issue in this case is that of agricultural and vocational education, but as it pertains to the needs of youth beyond the elementary school age, it is parallel with the effort in Massachusetts. These instances are typical of discussions and endeavors which are going on throughout the country.

TRAINING OF TEACHERS

SUMMARY OF REPORTS FROM SUMMER SCHOOLS FOR 1911

Divisions	Summer schools					Instructors			Students			Schools reporting es- timated cost	Estimated cost of sum- mer schools	
	Of universities	Of colleges	Of normal schools	Of other institu- tions, etc.	Independent	Men	Women	Total	Men	Women	Total			
United States.....	477	53	87	83	16	238	6,942 ¹	2,780 ¹	8,049 ¹	38,140	80,167	118,307	394	\$1,743,929
North Atlantic.....	93	10	9	7	12	55	1,227	297	1,524	6,957	9,825	16,782	63	207,318
South Atlantic.....	44	6	4	9	.....	26	374	259	633	1,845	5,040	7,585	37	89,511
South Central.....	101	6	10	16	.....	363	904	339	1,267	6,957	16,031	22,988	90	358,495
North Central.....	196	21	55	43	4	73	2,639	1,352	4,021	20,338	41,838	61,876	171	976,895
Western.....	43	10	9	9	.....	15	428	1,176	604	2,243	6,833	9,076	33	111,710

¹ In addition, 1,674 lecturers.

The training of teachers has been considered under several topics in this review; the reference here is to the formal provision for such training as set forth in the following summary:

Classes of Institutions	1910-11	
	Institutions	Students
Public normal schools.....	223	75,642
Private normal schools.....	65	8,453
Public universities and colleges.....	38	5,586
Private universities and colleges.....	101	5,670
Public high schools.....	711	14,680
Private high schools.....	259	5,246
Grand total.....	1,397	115,277
In all public institutions..	972	95,908
In all private institutions..	425	19,369

The number of graduates reported from the 288 public and private normal schools for 1911 was 16,669, or 19 per cent. of the total enrollment in training courses for teachers; if this proportion holds for all the institutions, the total graduates would be 23,181. On the supposition that one-fourth the teaching force must be renewed yearly, which is probably below the actual demand, five times as many graduates would be required.

Of the total number of students under training in the public normal schools, 79 per cent. were women; in the private normal schools, 69 per cent. The appropriations from public funds for the current expenses of 168 public normal schools amounted to \$6,368,761, which is twice the amount appropriated in 1900. The four states making largest appropriations for this work are as follows: Wisconsin, for 24 normal schools, \$536,912; New York, for 11 schools, \$441,824; Missouri, six schools, \$411,630; Massachusetts, 11 schools, \$410,777.

Summer schools, which are not included under the head of normal schools, are very largely attended by teachers and students intending to teach. The great extent of this work is indicated by the adjoining summary pertaining to 1911.

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In the following table is given a list of the summer schools reporting above a thousand students in 1911:

NAME	STUDENTS		Total
	Men	Women	
University of California.....	625	1,325	1,950
University of Chicago Summer School.....	1,710	1,538	3,248
Valparaiso University, Ind.....	2,160	1,875	4,025
University of Michigan.....	943	251	1,194
Michigan State Normal College.....	200	1,215	1,415
State Normal School, Fourth District, Springfield, Mo.....	571	837	1,408
State Normal School, Second District, Warrensburg, Mo.....	327	753	1,080
Chautauqua Institution, New York.....	600	2,600	3,200
Columbia University, New York.....	1,296	1,677	2,973
Summer School of the South, Knoxville, Tenn.....	653	1,827	2,480
University of Utah.....	367	723	1,090
University of Virginia.....	223	918	1,141
University of Wisconsin.....	1,031	522	1,553

RACE EDUCATION

Negroes.—Progress in respect to any particular phase of education cannot be measured from year to year; but in the review of a decade the advance in regard to negro education challenges attention. Statistics do not measure the advance, since it is even more marked in respect to the understanding of conditions and the spirit in which they are met by thinking men North and South, than in the actual provision of schools and their measurable results. The statistics of negro illiteracy (see XV, *Problems of Population*) should be considered in the light of the following comparative statistics presenting in concise form the actual and relative status of the common-school provision for the negro population massed in the southern states:

COMMON SCHOOL STATISTICS OF THE SOUTH¹

	Population 5 to 18 years of age		Enrolled in public schools		Average daily attendance		Number of teachers	
	White	Negro	White	Negro	White	Negro	White	Negro
1910.....	7,143,647	3,138,391	5,345,553	1,748,853	3,540,683	1,105,629	134,086	32,797
1900.....	5,892,392	2,705,142	4,261,309	1,560,070	2,775,059	981,026	98,710	27,313
1890.....	5,132,948	2,510,847	3,402,420	1,296,959	2,165,249	813,710	78,903	24,072

¹ Missouri and District of Columbia included.

Included in the statistics for 1910-11, there are 150 schools that have secondary classes. These schools report 513 teachers for the advanced grade, and 9,641 pupils pursuing secondary studies. It is impossible to show the relative expenditure for white and negro education, as the particulars are not, as a rule, reported separately. The state superintendent of public instruction in North Carolina, J. Y. Joyner, is one of the very few who has succeeded in a partial distinction between the two. In a recent review of the decade 1900 to 1910, he shows that for the last year the expenditure for white teachers in rural schools, num-

bering 7,047, was \$1,126,059, an average of \$160; the expenditure for colored teachers in rural schools, numbering 2,393, was \$229,519, an average of \$96.

It is unfortunately true that nearly half the negro children of school age in the South never get inside the schoolhouse; there are many reasons for this failure but the chief is the one emphasized by Booker T. Washington in a recent address. The average sum appropriated annually for each child at school in the North, he said, is \$20; the average for the negro child in some districts of the South is 93 cents; he was comparing extremes, but they are significant.

Hampton and Tuskegee, Atlanta and Howard Universities, and Durham with its national religious training school for colored people, are wonderful centers of light and power, but only the common school can reach the three million colored children in the South, hold them to the soil, and prevent their drifting to city slums.

The total number of secondary and higher institutions for the colored people in the states here considered, excluding the 150 public high schools, is 238; these institutions all have preparatory departments; on a total enrollment of 70,995 pupils they registered, in secondary departments in 1911, 23,834 students (9,730 male, 14,104 female), and in collegiate and professional departments, 5,316 students (3,893 male, 1,423 female). The equipment of these schools included 205 libraries comprising 442,155 volumes, and grounds, buildings and sites to the value of \$17,120,311. Of the entire number, 63 schools received aid from state, federal and municipal funds amounting to \$382,382. The support of the institutions comes chiefly from benefactions and subscriptions which amounted in 1910-11 to \$1,492,190 for 212 schools. The professional departments included in this summary are the main dependence for the recruitment of medical and clerical services for the eight million colored people in the southern states.

Alaska.—In addition to the education of negroes and Indians within the states themselves, the Government of the United States is responsible for the education of alien peoples in four distinct regions, and in each of these has worked out the solution of some important problem in race education. In Alaska, besides gathering the native children into schools, the Government, through the agency of the Bureau of Education, has established the reindeer industry, which is performing a very important service in the gradual transfer of the people from the nomadic state to that of fixed abodes and agricultural pursuits. The latest enterprise in behalf of the people is the institution of a complete sanitary and medical service by an ar-

range between the Bureau and the Public Health and Marine Hospital Service, which went into effect in March, 1912.

Hawaii.—Sanitary and hygienic regulations form an important feature of the educational administration in Hawaii, which in all important particulars is similar to that of the several states.

Porto Rico.—The systems of education in Porto Rico and the Philippines are under the general direction of the War Department, Bureau of Insular Affairs, but are directly controlled by the local departments of education. In Porto Rico great progress has been made in overcoming illiteracy, but there is wanted a system of industrial training adapted to the economic conditions and natural capacities of the people. The necessity is emphasized in the report of a special investigation recently ordered by the Secretary of War.

Philippine Islands.—The educational system in the Philippines offers a striking contrast to that of Porto Rico, by reason of the system of industrial training which is exciting world-wide attention. The system is based upon the native arts and crafts and utilizes both the natural aptitudes of the people and the immediate resources of the islands. Woodwork, pottery, basketry, lacework and the making of hats are all systematically taught in the public schools, and have already had a marked effect upon the export trade of the islands. Great attention is given also to the physical development of the young Filipinos, both boys and girls. Games, sports and athletics find place in the school programs. The training of native teachers has proved eminently successful, and of the 9,086 teachers employed in the schools 92 per cent. are Filipinos.

The present administration was established nine years ago, at which time it is estimated there were 2,000 public schools in the Philippines, all of a very elementary grade. At present, there are 4,121 primary schools, 245 intermediate, and 45 secondary schools. The enrollment has increased from an estimated 150,000 pupils to 650,000. The improvement

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in school architecture is remarkable, the buildings must meet the official standard in size and sanitary arrangement, and must be in a style suited to a tropical climate. In the city of Manila it is reported that 26 well-equipped trade schools have been established.

HIGHER EDUCATION

Total Provision.—Provision for higher education in the United States is made by universities, colleges, and technological schools, which to the number of 581 reported to the federal Bureau in the last scholastic year. Though differing widely in organization and scope, these institutions are all authorized by law to confer degrees; furthermore, in order to be classed as "higher" in the report of the Bureau, they must have definite admission standards; must offer at least a two years' course of standard college grade, and must have not less than 20 students in the college work.

The statistics of the higher institutions, summarized for 1911, show a total of 183,572 resident students, of whom 119,026, or 64.8 per cent., were men. The total number of professors and instructors was 28,285, of whom 23,260, or 82 per cent., were men. The property valuation of the institutions, including equipments, sites, and buildings, was, in round numbers, \$400,000,000; their productive funds \$299,350,000, and their receipts, exclusive of additions to endowment funds, amounted to \$80,900,000. In the decade 1901 to 1911, inclusive, the total number of students in higher education increased

NUMBER OF UNDERGRADUATE AND GRADUATE STUDENTS

Public Institutions

DIVISIONS	Institutions	Collegiate departments			Graduate departments			Total number of undergraduate and graduate students		
		Men	Women	Total	Men	Women	Total	Men	Women	Total
United States	89	47,331	17,909	65,240	1,997	1,003	3,000	49,598	18,949	68,547 ¹
North Atlantic	9	4,949	189	5,138	98	6	104	5,058	196	5,254
South Atlantic	22	6,635	548	7,183	124	26	150	6,764	574	7,338
South Central	12	6,221	1,454	7,675	124	31	155	6,404	1,487	7,891
North Central	25	22,537	11,508	34,045	1,287	616	1,903	23,991	12,149	36,140
Western	21	6,989	4,210	11,199	364	324	688	7,381	4,543	11,924

¹ Includes 307 non-resident graduate students.

Private Institutions

DIVISIONS	Institutions	Collegiate departments			Graduate departments			Total number of undergraduate and graduate students		
		Men	Women	Total	Men	Women	Total	Men	Women	Total
United States	492	64,118	43,356	107,474	5,580	2,278	7,858	70,270	45,725	115,995 ¹
North Atlantic	103	31,267	14,653	45,920	3,453	1,186	4,639	35,114	15,882	50,996
South Atlantic	89	6,066	6,659	12,725	509	71	580	6,617	6,733	13,350
South Central	86	4,803	4,771	9,574	109	76	185	4,941	4,854	9,795
North Central	186	18,999	15,437	34,436	1,285	800	2,085	20,386	16,272	36,658
Western	28	2,983	1,836	4,819	224	145	369	3,212	1,984	5,196

¹ Includes 663 non-resident graduate students.

by 69,200, or 60 per cent. The ratio of increase for the women students alone was 66 per cent.; for the men students alone 57 per cent. The current income of the institutions increased during the same period by 28 per cent. These ratios all exceed the ratio of increase in the population for the decade, namely, 21 per cent.; so that, from every point of view, it appears that the influence and the resources of higher education are keeping full pace with the general development.

Distribution.—The bearing of this large provision upon the material and intellectual development of the nation is more clearly shown by the classification of students and their geographical distribution as set forth in the tables on the preceding page.

Resources.—Of the 89 public institutions comprised in the table, 69 are open alike to men and to women, and of the remainder eight are purely technological. This important group, to which belong all the colleges endowed by the land-grant act of 1861, includes six institutions having annual incomes in excess of one million dollars. Their large resources place them upon the highest plane in respect to equipment for the complex services of higher education.

On the same plane as regards their financial resources stand eight uni-

versities of private endowment. Although money values cannot be taken as a basis for estimating the relative importance of higher institutions, large resources are essential to the work, especially when liberal, technical, and professional departments are combined in one organization. This combination is characteristic of the United States; that it does not prevent the highest order of achievement appears from the fact that the outcome of the college, or undergraduate, work of the 14 institutions referred to is rated in the first order under searching tests, while their professional departments have obtained world-wide recognition. In this group are registered 60,402 students, or 33 per cent. of the entire student body.

As illustrating further the relation between financial resources and educational effectiveness, it may be noted that the additional institutions whose graduates sustain high records in postgraduate work are, with very few exceptions, liberally endowed. Special interest, therefore, attaches to the relative status of the different divisions of the country in respect to the money invested in higher education, excluding buildings, sites, and equipments, but including all productive funds, as shown in the following table:

GEOGRAPHICAL DIVISIONS	Productive funds	Total receipts, exclusive of additions to endowments, 1911	Requests for endowment, 1911
United States.....	\$299,347,272	\$80,902,571	\$13,769,870
North Atlantic.....	\$148,236,139	\$30,972,182	\$7,501,604
South Atlantic.....	15,875,017	8,500,431	1,110,028
South Central.....	15,780,781 ¹	6,598,293	269,512
North Central.....	80,277,033	27,749,025	4,534,391
Western.....	39,678,302	7,082,640	354,335

¹ The \$10,000,000 endowment for the Rice Institute, Houston, Texas, was not included in the data tabulated.

The distinction between universities and colleges is rapidly becoming one of financial difference. Five universities of long standing have endowment funds of \$10,000,000 and upward; the number has been increased the present year by the opening of the Rice Institute at Houston.

Texas. Columbia University leads the group with \$27,500,000, increased to \$31,000,000 if the funds of Barnard, Teachers' College, and the New York College of Pharmacy be added. Harvard's productive funds amount to \$25,000,000, Leland Stanford, Junior, is third with \$24,000,000, and

the University of Chicago is fourth with \$15,000,000.

Forty-eight institutions report productive funds ranging from one to ten million dollars. Of the 54 universities thus richly endowed, 31 are in the North Atlantic Division, which, as the foregoing table shows, possess 49 per cent. of all the productive funds devoted to the purposes of higher education. The aggregate of gifts and bequests, excluding public grants, reported for the year 1910-11, was \$22,963,145. Of this amount, \$17,500,000 went to 50 institutions.

The concentration of resources is a direct result of development of the physical and social sciences, which has not only greatly multiplied the courses of instruction and the recognized professions, but has created the need of costly equipments. Hence the richly endowed universities are becoming national centers for intensive study and research, while to the smaller institutions falls the task of developing the intellectual and ethical forces of the nation either for the uses of general life or for ultimate specialization. The consciousness of this mission is indicated by the action of a few colleges in limiting themselves to undergraduate work, and also by measures taken to consolidate small colleges within limited areas and to bring them into affiliation with central institutions. In the process of change, a few colleges have dropped back to the class of secondary schools, and thus, while the number of college students increases, there is a decrease in the number of institutions reporting under that head.

Scholastic Demands.—The prevailing demands of the country in respect to higher education are shown by the distribution of the undergraduate students among the different courses of instruction. The classical course still leads, claiming 70,602 students (36,053 men; 34,549 women), or 40 per cent. of all undergraduates in 1911; the general science course comprised 11,685 students (8,819 men; 2,866 women), or 6.8 per cent. of the total.

The principal technical courses ranged as follows:

Course	Number of students	Per cent. of total
Engineering.....	31,499 (including 15 women)	18
Education.....	11,256 (including 8,259 women)	6.5
Agriculture.....	8,243 (139 women)	4.7
Commerce.....	4,191 (363 women)	2.4

The remaining students (21.6 per cent. of the total) were distributed among other technical and art courses.

The ultimate outcome of this prolonged period of study, in the activities of practical life, it is not easy to measure, but some light is thrown on this subject by the results of a study of the "Professional Distribution of University and College Graduates," recently published as a bulletin of the Bureau of Education. It need hardly be recalled that in the earliest years of our history a large proportion of college men were looking toward the ministry. Without following the gradual departure toward law and medicine, the present situation may be inferred from the final summary of 37 representative colleges. For this group it appears that teaching is now the dominant profession of their graduates, taking 25 per cent.; business claims 20 per cent.; law, which took one-third of all the graduates at the beginning of the nineteenth century, now commands only 15 per cent.; medicine, with between 6 and 7 per cent., seems to be slightly on the decline; engineering is slowly going up, but still takes only 3 or 4 per cent.; while the ministry, with its present 5 or 6 per cent. of the total, has reached the lowest mark for that profession in the two and a half centuries of American college history.

By reason of the multiplication of public careers, new professions are gradually assuming form, and their preparation becoming more and more differentiated from the main course of liberal education. The demands of pedagogy and of library administration, of commercial affairs, and social service have already given rise to special schools or departments

which are practically professional in requirements and standards. The recent equipment of the McGowan laboratory of political science, in Columbia University, emphasizes the dawning notion that municipal, state, and national administration are weighty services, for which men should be prepared by some other process than that of experience in manipulating political machinery. The organized courses of instruction in political science in the leading universities offer admirable training for public careers, and it is noticeable that the professors in these departments are called more and more to serve as experts upon government commissions.

Journalism, which has achieved its own professional standing, gains distinctive recognition in the university circle by the endowment of the school of journalism at Columbia University. The cornerstone of the building commemorating Mr. Pulitzer's gift was laid with appropriate ceremony in July. (See XXXIII, *Journalism*.)

Degrees.—The great variety of degrees conferred by universities and colleges has been criticized as a weakness of the American system; but the same usage is found in other countries under different names. The abuse of scholastic sanctions is rapidly diminishing in America. Excluding degrees out of course, honorary degrees and professional de-

grees in law, theology, medicine, dentistry, and pharmacy, the number of degrees conferred at the close of the scholastic year 1910-11 was 27,319, of which men received 18,524 and women 8,795. The degree of bachelor of arts led, with 13,101 recipients (7,101 men, 6,000 women); the bachelor of science degree followed with 6,542 recipients (5,469 men, 1,073 women). The list includes 16 orders of the bachelor's degree, and six engineering degrees of the first order; among these civil engineering led with 697 graduates, all men. The higher degrees included eleven classes of the master's degree, and four orders of the doctorate. The doctorate in philosophy was conferred upon 450 candidates (403 men, 47 women), all of whom passed examinations. Only 868 honorary degrees were reported for the year, of which number the D.D. claimed 337 and LL.D. 237.

Circles of Influence.—From a recent investigation by Prof. Rudolph Tombo, Jr., it appears that the national scope of the universities of the older states has not been seriously diminished by the competition of the great state universities. The latter, with the exception of Michigan University, are more local in character of the student body than the eastern universities, as indicated by the following comparison between a number of representative universities of the two types:

PERCENTAGE OF STUDENT BODY RESIDENT IN UNIVERSITY STATE

Eastern Universities		State Universities	
	Per cent.		Per cent.
Columbia.....	62	California.....	88
Cornell.....	55	Illinois.....	77
Harvard.....	50	Michigan.....	53
Pennsylvania.....	67	Minnesota.....	94
Princeton.....	21	Wisconsin.....	75
Yale.....	35		

The Massachusetts Institute of Technology is a close second to Harvard in its scope, drawing 44 per cent. of its students from other states or countries; the same proportion holds also for Lehigh.

The leading colleges for women in the East range very near each other in the matter here considered, the proportion of their students drawn from their respective states being as

follows: Mount Holyoke, 34 per cent.; Vassar, 34; Bryn Mawr, 32; Wellesley, 29; Smith, 24.

Foreign Students in the United States.—An investigation conducted by the Bureau of Education gives the following interesting facts with regard to foreign students in institutions for higher education in the United States: Total number of foreign students in 1910-11, 4,499;

of these, 4,014 were in universities, colleges, and technical schools, including professional departments, in all, 274 institutions. The remaining 485 foreign students were distributed in 80 independent professional schools. In the total number, 17 foreign countries were represented, beside Hawaii, which furnished 159 of the students classed as foreign. Canada heads the list with 783 students, followed by China with 523. Great Britain furnished 214, and Germany 212. The smallest contingent came from South Africa; France is not in the list.

In this connection interest attaches to the Hindu scholarships established this year at the University of California by a wealthy Hindu resident and intended for students, men and women, brought from India to study at the university under the strict promise to return to their native land after graduation. By this means the influence which the university has already exerted over the Oriental mind promises to be greatly extended.

The Standardizing Movement.—The detailed record of higher education discloses many evidences of an increasing regard for definite standards as a means of insuring efficiency in the institutions themselves, and of facilitating the transfer of students from one institution to another or from one order of training to another.

New York offers the conspicuous example of a state in which the work of higher education has long been regulated by official action. This was a function of the Board of Regents before its consolidation with the Department of Education, in 1904, and since that time the system has been vigorously maintained. Prescribed minimum conditions must be met by all institutions authorized to confer degrees, and only accredited professional schools find place on the register of the regents. The admirable operations of this system have attracted unusual attention the present year by reason of the interest in the opening of the Education Building at Albany. The imposing structure, the impressive ceremonies, the brilliant and representative as-

sembly all served to emphasize the distinctive features of the system which was thus concretely typified.

State universities are very important agents in the work of regulating and unifying standards in their respective states. In California this purpose is carried out on both the administrative and scholastic side by including in the state board of education the president and the professor of pedagogy of the state university. The state of Iowa, in the reorganization of the system of public instruction now in progress in accordance with the law of 1909, has brought the three state institutions of higher education under one administrative body, the state board of education. This body is now engaged in the effort to consolidate departments and to regulate admission to the three institutions by common standards and thus unify the work of secondary education. Schools and colleges are promoting this same movement by their joint associations, as are also the great university association, namely the Association of American Universities, and the National Association of State Universities. The Carnegie Foundation has contributed materially to the determination of standards.

Investigations of the Federal Bureau.—The national government has special cause for activity in this direction, both because of questions relating to the international equivalence of degrees and also because of responsibilities growing out of the appropriations for the land-grant colleges. From time to time, also, the federal Bureau has been called upon by state departments of education to render aid in the attempts to reorganize their schemes of higher education. It was, therefore, in response to a very real demand that the position of specialist in higher education was created in the Bureau in 1910, and investigations started along the lines indicated.

The endeavor made at the request of the deans of graduate schools to estimate in a general way the relative efficiency of undergraduate courses pursued at different centers and under widely different conditions, as a preparation for the work

of graduate and professional schools, has already proved of service to students themselves as well as to the professors in the different orders and centers of instruction. In a broad outline of the scope of this investigation Dr. Claxton explains that it relates to only 10,858 students doing graduate work. Of these 8,369, or 77 per cent., are enrolled in 25 institutions, and 539, or 5 per cent., in nine other institutions. The remaining 18 per cent. are widely scattered. Considering numbers, therefore, the investigation pertains to a narrow division of the province of higher education; but in proportion as this division is rightly understood the general work of the undergraduate department will be more fully appreciated and the true function of graduate departments accentuated. The experience gained by this tentative examination has yielded valuable suggestions as to the means of conducting more comprehensive investigations, for which requests have already been received.

By the terms of an agreement made in November, 1910, with the National Association of State Universities, the specialist of the Bureau has during the year devoted a large part of his time to a study of the state-university problem, inspecting the equipment, organization, and work of 16 state universities. Nine privately endowed colleges and universities, in every case by their own request, have been similarly examined. The state of Oregon, through its department of public instruction, in accordance with an act of the legislature in 1911, asked and received the services of the specialist in standardizing the colleges and universities of that state. The state of Virginia, after a similar investigation at the request of the Virginia Education Commission, received a detailed report upon the five institutions of higher education which draw support from that commonwealth.

Liberal Tendencies.—In the province of higher education the tendency to curb excessive liberty has been accompanied by a broader conception of the social mission of colleges and universities and by new emphasis upon the philosophic spir-

it. The former tendency is manifest in the provision of special courses of training for settlement work, for vocational directors, for welfare secretaries, and by varied and ever-increasing modes of university extension.

The call for funds, the plans of reorganization and extension which mark the year's record of individual institutions are the signs of this process of expansion and internal multiplicity. A few instances must suffice to illustrate these activities.

The large plans which Chancellor Brown has formed for the New York University are foreshadowed by his request for \$4,750,000 for the needs of the present year, and his estimate that in the next 12 years \$24,000,000 will be required for the work. The purpose to raise the university School of Commerce to the highest rank and enlarge its scope is indicated by the appointment of Dr. J. W. Jenks of Cornell University as professor of government and public administration.

In the scheme of reorganization adopted by the University of Pennsylvania, the Wharton School of Finance, it is reported, will have independent organization, and the Towne Scientific School will take charge of all the technical courses of the university.

Endowments.—The following institutions have each secured an endowment of \$1,000,000 during the year: Brown University, Providence, R. I. (Pembroke College, the annex to Brown, has profited by the effort to the extent of \$200,000); Wesleyan University, Middletown, Conn.; Western Reserve University, Cleveland, Ohio (main object of endowment, the medical school); Trinity College, Durham, North Carolina. The Massachusetts Institute of Technology received from a donor whose name is not made public the princely gift of \$2,500,000. The institutions named are all situated in states in which higher education exists by virtue of private initiative and zeal for the cause. The West is the region of state universities, a number of which have been equally fortunate by the ready response of legislation to their appeals for larger appropriations.

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Johns Hopkins will devote \$600,000 granted by the state to the erection of a new laboratory for the School of Science; for its equipment an annual appropriation of \$50,000 is provided.

Notable Celebrations: Princeton.—The 14 months' interregnum at Princeton University, which followed the resignation of President Woodrow Wilson, was terminated in January of the present year by the election of John Grier Hibben, Ph. D., LL. D., as his successor. Dr. Hibben was inaugurated May 11, with impressive ceremony, to which national dignity was imparted by the presence of the Chief Justice and the President of the United States. The great feature of the scholastic exercises was the inaugural address by President Hibben, whose theme, "The Philosophy of Education," called forth the declaration of a confident belief "in the existence of a body of universal truths, independent of age and race, which vitally concern the ultimate values of life and which determine the possibilities of human development." The custom of conferring honorary degrees was followed, but with restriction of the honor to the Chief Justice and the President of the United States.

Amherst College has been a center of continued interest during the year by reason of a forceful experiment and a great ceremony. In pursuance of the purpose announced last year to emphasize the classics in its reorganized curriculum (see *AMERICAN YEAR BOOK*, 1911, p. 820), the college brought to its service the present year Dr. Gilbert Murray of Oxford University, the foremost Greek scholar of the English-speaking world. The classes which Dr. Murray conducted and his public lectures on the Greek drama proved of absorbing interest and gave enormous impetus to the "Amherst plan."

The resignation of President George Harris brought to a close a most successful administration, and the climax of interest was reached at the inauguration of the new president, Dr. Alexander Meiklejohn, formerly dean of Brown University. The ceremony, which took place Oct. 16, drew from eminent representa-

tives of sister institutions, and from the president-elect, hearty indorsement of the purpose to which Amherst is committed. The high conception of the college mission with which the new era opens was summed up in the closing sentences of the president's address. The student, he said, "must understand and the friends of the college must understand that knowledge is the guide of life, that the college intends to give, not the specialized information of the trade or professional school, but the unified interpretation of the world which is insight."

Mount Holyoke.—The celebration of the 75th anniversary of the founding of Mt. Holyoke, Oct. 8-10, was one of the most inspiring ceremonies that has ever taken place in this country. A thousand graduates and more than a hundred representatives of learned institutions, including 12 foreign delegates, were in the assembly. A particularly interesting episode of the ceremonies was the announcement of the complete success of the endeavor to raise half a million dollars for the endowment. Following time-honored custom, honorary degrees were conferred upon several persons distinguished by their service to the cause of education or to the public. Among the number was Miss Julia C. Lathrop, the recently appointed chief of the Children's Bureau.

Michigan University also celebrated this year its 75th anniversary, drawing together for that occasion a distinguished company of its alumni from high places in the Government service, in education, and in business and professional life. The history of this institution, as rehearsed by its loyal sons, epitomizes that of higher education in this country for the last 50 years, which has received impulse and direction from this vigorous center.

New York State Education Building.—Reference has already been made to the dedication of the New York State Education Building, the first of its kind in the United States and one of the noblest structures ever erected to the service of the ideal interests of the people. The dedicatory ceremony, which took place Oct.

16-18, was notable for the representative character of the assembled company. The occasion gave emphasis to the inherent unity of educational processes, symbolized by this unique structure and by the system to which it pertains. (See also *Libraries, infra.*)

Rice Institute.—The opening of the Rice Institute at Houston, Texas, is the most significant event of the year as regards higher education. By the princely endowment of \$10,000,000 it has secured to the state and to the entire Southwest opportunities for the intellectual development of the people and for scientific research which in the older states have been the outcome of long effort and much sacrifice. The carefully matured plan of operation developed under the direction of the appointed president, Edgar Odell Lovett, Ph. D., LL. D., places the new foundation in the group of institutions that are essentially national in scope, while through the independence which private endowments insure, it will naturally become the center of inspiring influence for the state universities of the developing Southwest.

The dedicatory exercises, which took place Oct. 10-12, were on a scale commensurate with the high purposes and large resources of the new foundation. Their chief distinction was the presence of a company of illustrious savants, fittingly termed by President Lovett "the twelve prophets of the fundamental sciences." The group included Prof. Wilhelm Ostwald of Leipzig, Prof. Vito Volterra of Rome, and Prof. Rafael Altamira y Crevea of Madrid. The historic traditions of the southwestern part of this continent were revived by Dr. Crevea, who found unique illustrations of the theme of his lecture on the "General Ideas in the History of Human Progress" in the Spanish backgrounds of American civilization.

Changes of Personnel.—The following changes of personnel in addition to those already referred to are noteworthy:

Stratton D. Brooks, A. M., M. Pd., resigned as superintendent of public schools, Boston, Mass., to accept the

presidency of the University of Oklahoma; he was inaugurated with impressive ceremony Oct. 21. Mr. Brooks is succeeded at Boston by Frank B. Dyer, who in his nine years' service at Cincinnati solved for that city the problem of vocational training.

Edwin B. Craig, LL. D., member of the board of Carnegie Foundation for the Advancement of Teaching, has accepted the presidency of the University of Montana.

Rev. Alpheus J. Donlon, S. J., was appointed to succeed Rev. Joseph Himmel, S. J. (deceased), as president of Georgetown University, D. C.

C. A. Dunway, Ph. D., resigned the presidency of the University of Montana to accept the same position in the University of Wyoming.

Edward T. Fairchild, D. Pd., state superintendent of public instruction, Kansas, and president-elect of the National Education Association, has accepted the presidency of the New Hampshire College of Agriculture.

Rev. C. R. Jenkins, D. D., has been appointed president of Wesleyan Female College, Macon, Ga., one of the oldest and most successful colleges for women in the country.

Ezra Squier Little, D. D., was inaugurated, Oct. 24, president of Drew Theological Seminary, Madison, N. J., the oldest Methodist seminary of its class in this country.

Rev. Stephen M. Newman, D. D., was appointed president of Howard University, Washington, D. C., succeeding Rev. William P. Thirkield, LL. D., who has been elected bishop in the Methodist Episcopal Church, see of New Orleans. Dr. Newman was formerly pastor of the First Congregational Church, Washington, and later president of Keemar College for Women, Ripon, Wis.

Raymond A. Pearson, LL. D., noted expert in dairy science, has accepted the presidency of Iowa State College of Agriculture.

Ira Remsen, LL. D., after a forceful administration of 11 years, has resigned the presidency of Johns Hopkins University, his resignation to take effect when the position shall be filled.

Robert Sharp, Ph. D., distinguished scholar and author, dean of the grad-

uate department of Tulane University, has been appointed president of that institution.

Higher Education for Women.—Higher education for women is provided in coeducational colleges and in colleges exclusively for women. In 1911 the former reported 42,280 women in the undergraduate departments, which was 38 per cent. of their entire enrollment. The 97 separate colleges for women enrolled 18,985 students. In graduate departments, which are chiefly in the coeducational universities, there were 3,281 resident women students, and in the professional departments, 1,389. The women greatly exceeded the men in the courses of instruction in education, music, and art, and they monopolized the courses in household economy. The record of scholastic degrees indicates quite clearly the prevailing interests of women who complete a full college course. In the past year the A. B. degree was conferred upon 6,000 women graduates, the B. S. upon 1,073; 464 received the Ph. B., and 130 B. Ped. Of second degrees the A. M. led with 568 candidates; the remaining degrees, both of the first and the second order, were widely distributed.

Much interest has been excited by statistics published in the journal of the American Medical Association, showing a decline in the number of women entering the medical profession. The total for 1911 was 679, 242 less than the corresponding number in 1908. The explanation is probably found in the increase in the number of careers open to women.

Agricultural Education.—The year has been marked by the jubilee celebration of the passage of the Morrill land-grant act of 1861, which founded a new order of teaching institutions and started a movement whose full significance is just dawning upon the country. The jubilee was specially observed at the University of Maine, which at the same time celebrated the fifteenth anniversary of its transition from the college to the university plane. This double ceremony illustrates in a striking manner the expansion of the land-grant colleges during the half

century. It has been necessary for them to round out specialized training by larger intellectual discipline and, at the same time, to meet the needs of agricultural science by elaborate and expensive equipments. The same causes have brought about a demand for intermediate schools which shall preserve the connection originally formed between the common schools and the land-grant colleges. Hence the rapid increase in the number and variety of agencies for agricultural education. (See also XIX, *Agriculture*.)

The Massachusetts agricultural college in 1907 established the first professorship in agricultural pedagogy; at present fully two-thirds of the colleges of this class make some provision for training teachers and supervisors. The need of such provision is urgent, for, under the spur given to the subject by recent state laws, fully 2,000 high schools include agriculture in the courses of study, while at the same time the dearth of properly trained teachers prevents effective instruction.

The total number of instructors, including professors, assistants, extension workers, and experiment station investigators, employed in all departments of the land-grant colleges during the year ending June 30, 1911, was 6,902, of which number 925 were women. This total includes 467 instructors in the 16 separate institutions for colored students. Omitting these, of the 6,435 remaining, 3,649 were employed in the colleges of agriculture and mechanic arts and in the experiment stations.

The following table shows the distribution of students among the different courses of instruction:

Courses	1911
Agriculture.....	8,859
Domestic science.....	2,258
Mechanic arts.....	16,301
Short and special courses.....	7,529
All departments.....	89,188

Of the total students 8,135 were in the 16 institutions for colored people, and of this number 6,463 were in preparatory departments.

The total income of the colleges, excluding appropriations for experiment stations, farmers' institutes, and extension work where these

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items are separately reported, was \$20,579,559. The separate amounts referred to add to the foregoing \$369,389. For experiment stations the colleges received from the states \$776,563, and from the federal Government \$1,361,913. This gives for all purposes a total for the year of \$23,087,424. Of this amount 20 per cent. was received from the federal Government and 52 per cent. from the states. Excluding the experiment station funds and the extension

work and farmers' institute funds, 16 per cent. was supplied by the federal Government and 55 per cent. by the states.

Professional Education.—Preparation for the three professions, long classed as liberal, is the work of university departments and independent schools. The principal facts with reference to the provision for professional education are set forth in the following summary of the latest reports:

GENERAL SUMMARY OF STATISTICS OF PROFESSIONAL SCHOOLS, 1910-1911

CLASS	Schools ¹	Instructors	Students	Increase (+) or decrease (—) as compared with 1909-10	Graduated in 1911	Students having a degree
Theology.....	193	1,495	10,834	— 178	1,877	3,266
Law.....	116	1,570	19,615	+ 48	3,901	4,180
Medicine.....	122	7,598	19,146	— 2,248	4,028	2,044
Dentistry.....	55	1,574	6,961	+ 522	1,764	122
Pharmacy.....	77	847	6,131	— 95	1,743	84
Veterinary medicine.....	21	408	2,571	— 146	706	18

¹ Including professional departments of universities.

CLASS	Value of grounds and buildings ²	Endowment funds ²	Benefactions ²	Total income ²	Volumes in libraries ²
Theology.....	\$21,419,790	\$35,313,101	\$1,552,964	\$3,399,286	1,304,059
Law.....	3,881,350	1,959,969	76,776	1,178,089	840,208
Medicine.....	19,723,032	7,985,325	930,251	2,183,128	358,593
Dentistry.....	1,947,154	.....	10,671	699,204	31,363
Pharmacy.....	2,070,223	.....	14,796	441,311	75,470
Veterinary medicine.....	919,636	.....	.....	383,236	13,692

² So far as reported; in many cases the property and financial reports of the professional schools are not separable from those of the universities.

In addition to the strictly professional, there are 1,118 schools for the training of nurses, having a total of 29,762 students; of this number, 7,709 graduated during the year. (See also IX, *Legal Education*; XXIII, *Engineering Education*; and XXX, *Medical Education*.)

Correspondence Schools.—Correspondence study courses are conducted by independent schools and university departments. Of the former the most widely known are the International Correspondence Schools, of Scranton, Pa., which number 24, offering 230 courses, and report an annual registration exceeding 11.3 million students. On an average 100,000 scholarships are annually taken out in this organization.

Chicago is the seat of two strong

institutions of this class, the Chicago Correspondence Schools and the American School of Correspondence; the latter is particularly distinguished by the excellence of its text books on technological subjects.

The example set by the Union Pacific Railroad of establishing schools of instruction pertaining strictly to railroad work, not excluding the branches of a general education, has been followed by several other railroad companies. The Utica School of Railroad Signaling, the only one devoted to that important branch, is in charge of an advisory board representing numerous railroads.

The number of universities offering systematic courses of instruction by correspondence steadily increases. Chicago University, the first of our

higher institutions to enter into this field, has closed its most successful year, having had 3,031 students at work under 129 different instructors in 340 courses. Only students are counted who were active during 1911-1912.

The University of Wisconsin main-

tains a forceful correspondence department comprising five courses of instruction carefully adapted to the wants of different classes of adults. The enrollment in these courses during the year reached a total of 5,936, of whom 479 were in the course for the training of teachers.

AGENCIES OF PROMOTION

The General Education Board was founded by John D. Rockefeller in 1907 for the administration of the funds appropriated by him for the endowment of education. The principal fund amounts in round numbers to \$30,900,000, and the reserve fund to \$1,300,000, the net income from the total exceeding \$5,600,000.

The appropriations announced at the spring meeting of the board amounted to nearly \$1,000,000, of which \$450,000 was conditionally pledged to four colleges, the largest single donation to this group being \$200,000 to the University of Rochester, New York. The Board appropriated \$250,000 for the endowment of the Seaman A. Knapp demonstration farm to serve as an adjunct of the George Peabody College for Teachers. The site for the farm has been selected and by a concerted effort on the part of educators in the South a fund is being raised to purchase the property and necessary equipment.

At the annual meeting of the Board, held in October, over half a million dollars additional appropriations were announced. This sum included \$445,000 voted to educational institutions; for the first time in the history of the enterprise aid was extended for agricultural demonstration work in northern states, \$8,000 being assigned for this purpose, to be used in four counties in Maine, under the direction of the State College of Agriculture, and \$1,500 for a similar experiment in St. Lawrence County, N. Y.

The Rockefeller Foundation.—Hon. Andrew J. Peters of Massachusetts has secured from the House Committee on the Judiciary a unanimous report on his amended bill to incorporate the Rockefeller Foundation. The proposed corporation is designed

to promote the well-being of the entire people, by efforts for the prevention and the relief of suffering, and for the promotion of all forms of human progress. The amount of the property of the corporation is limited to \$100,000,000 exclusive of increases in value. If the bill becomes law, presumably the General Education Board and the Sanitary Commission, supported by Rockefeller funds, will come under the management of the new body.

The Carnegie Foundation for the Advancement of Teaching.—The sixth annual report of the president and treasurer of the Carnegie Foundation issued during the current year brings the record of its work to Sept. 30, 1911. The endowment amounted at that time to \$12,123,000, comprising Mr. Carnegie's original gift of \$10,000,000 in 1905, an accumulation from income of \$1,123,000, and \$1,000,000 received in 1911 as the first installment of the additional gift of \$5,000,000 made in 1908. From the income of \$590,000, the sum of \$526,000 was expended in retiring allowances and pensions, \$36,000 in general administration, and \$16,000 in publications. Thirty-one retiring allowances and 17 widows' pensions were granted during the year, increasing the number in force to 373, the average annual payment being \$1,631, and the total distribution to date \$1,746,000. The list of accredited institutions now includes 72 universities, colleges, and schools of technology, the University of Virginia having been added during the year.

The exchange of teachers conducted through the Foundation sent nine American teachers to Prussia during the year and received seven Prussian teachers in the United States, in both instances with gratifying re-

sults. The Foundation has recently published its second bulletin on medical education (see XXX, *Medical Education*).

The George Peabody Fund.—In accordance with the decision of the trustees of the Peabody Fund, announced at their last annual meeting in 1911 the final distribution of the fund has been effected. To the state universities of each of ten southern states, \$40,000 was assigned to be applied to their departments for the training of teachers. The remainder was given as an additional endowment to the George Peabody College for Teachers. In addition to an endowment of \$2,500,000 from the trust fund, this institution receives \$1,000,000 in money and land from the city, state, and county, and \$1,000,000 raised by subscription. The college will be removed to its new site adjoining Vanderbilt University, and in its expanded form will be opened for students in the fall of 1913.

The Carnegie Endowment for International Peace.—The latest addition to endowments for education, including in the term the highest ethical development of the people, is the gift of \$10,000,000 by Mr. Carnegie for the promotion of international peace (see also III, *International Peace and Arbitration*). The work is organized in three main divisions, namely, division of intercourse and education, under the direction of President Butler of Columbia University; division of international law, under Dr. James Brown

Scott; and division of economics and history, under the direction of Prof. John Bates Clark. The work of the third division was mapped out at a conference held at Berne in August, 1911, in which 22 of the leading economists and publicists of the world participated. The second division is arranging plans for a summer school of international law, to be held in the Peace Palace at The Hague in the summer of 1913. Among the measures adopted by the division of propaganda are international visits of representative men, similar to those of Count Apponyi and of Baron d'Estournelles de Constant to this country, and the world tour of Dr. Charles W. Eliot, recently completed. This division is also concerned in promoting closer relations between the United States and the other American republics by establishing an exchange of professors.

The president of the executive committee of the organization is Hon. Elihu Root; the main office is at Washington, and a European office has been established at Paris. The budget adopted by the trustees at their meeting Dec. 14, 1911, authorizes an expenditure of \$487,270 in the current fiscal year.

The Russell Sage Foundation, with an endowment of \$10,000,000, has continued the investigation of the causes of poverty and misery with special reference to the means of preserving the health of children and promoting sanitary housing for the poor. (See also XVIII, *Prevention, Correction, and Charity*.)

ASSOCIATIONS AND CONFERENCES

National Education Association.—The fifteenth annual meeting of the National Education Association was held in Chicago July 6-12, at which time it registered an active membership of 2,500 and associates to the number of 9,000. Unusual popular interest had been excited in the meeting and the audiences at most of the sessions far outnumbered the members. Sensational incidents such as occurred at the two previous meetings of the association were not wanting. They centered in the election of the president, and are of

more than passing interest because, when the turmoil has passed, it will be found that these scenes were merely incidental to a radical change in the character and scope of the Association. The ultimate election of Edwin T. Fairchild, state superintendent of public instruction, Kansas, as president has cleared the atmosphere. Mr. Fairchild is progressive and judicial, and under his administration the Association bids fair to regain its bearings. Meanwhile the rapid development of the country and the growing complexity

of educational interests preclude the continued predominance of a single body like the National Education Association. The great and permanent value of the work accomplished by the section meetings of the Association seems to foreshadow its future rôle as a center for intensive discussion and exchange of experiences on strictly scholastic matters. The income of the permanent fund of the Association, amounting to nearly \$190,000, if judiciously applied, would yield large returns from investigations comparable to that of the Committee of Ten. The report of this body set a new standard for secondary education in this country, and had marked effect abroad.

The topics of special moment presented before the general meetings of the Association in Chicago were the needs of rural schools, the part of public schools in the international peace campaign, and the establishment of a national university. The last measure was advocated by the presidents of four universities, Dr. James of Illinois, Dr. Van Hise of Wisconsin, Dr. Baker of Colorado, and Dr. Thompson of the University of Ohio. All three agreed in the support of a plan for a research university with an administrative office at Washington, as embodied in bills introduced in Congress.

American Association for the Advancement of Science.—The educational section of the American Association for the Advancement of Science is chiefly concerned in the application of scientific methods to educational problems, and in this limited field is promoting economy in accounts and exactness in school records and also working toward practical tests of efficiency in educational processes. At the annual meeting held in Washington the causes and measures of retardation were the chief subjects of discussion.

The Fifteenth Annual Conference for Education in the South was held in Nashville in April and in numbers and enthusiasm reached the high-water mark of the series. The great change that has taken place in the South during the past half decade is illustrated by the subjects that were uppermost in the conference.

Compulsory education and the education of the negro, which a few years ago could scarcely be touched, were discussed with the greatest freedom.

The general meetings of the Conference excite and maintain enthusiasm for the cause, and develop public opinion for its support; but more and more its practical work is managed through the section meetings. Among the many features brought out in the section meetings it is difficult to particularize. Special mention should be made, however, of the work of the supervisors of rural schools, appointed by the Conference but attached to the state offices of education. The supervisory plan is one of recent adoption, and is itself proof of high constructive leadership.

The General Federation of Women's Clubs is educational in the broadest sense, and hence its department of education gives the key to its chief purpose and activities. At the biennial meeting held in 1910 a definite plan of educational work was outlined, and the reports received at the biennial held at San Francisco, in June, 1912, showed that almost every club in the Federation had systematically pursued some one line of effort laid down at that time. School sanitation and moral training in the public schools have been the preferred interests of club effort. The School Improvement Leagues, which are among the federated societies, have accomplished marvelous results in the South in securing new school buildings and in exciting legislative action in behalf of the schools. A special feature of the biennial meeting was the conference on vocational education (see XVI, *Industrial Education*). This work appeals to thoughtful women as it opens the way for a national treatment of the problem of women in industry.

National Association for the Study of Exceptional Children.—The third annual conference of the National Association for the Study of Exceptional Children was held in New York City, Oct. 30-31, Commissioner Claxton presiding. The subject was considered in its broadest sense, including children both above and below the normal.

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LIBRARIES

JAMES I. WYER

Buildings.—During the year 1912 five important new library buildings have been dedicated, representing four distinct types of libraries, the college, large public, small public, and state.

On January 6 the St. Louis Public Library dedicated a building costing \$1,500,000, of which sum Andrew Carnegie furnished \$500,000, and \$1,000,000 was taken from funds of the library. The new structure provides an ample and handsome central administrative building, with sufficient storage to serve a central reference and circulating library and to care for books not distributed to the branches. An unusual architectural feature is the construction of a fifth pavilion in the center of the court around which the building is constructed. Access from the upper floors of this pavilion to the outer parallelogram is by means of bridges. Light and air seem not to be seriously curtailed, while centralized administration is vastly helped. Accommodations and conveniences for members of the staff are unusually numerous and excellent. (See *Library Journal*, Feb., 1912.)

On Jan. 10 the Springfield Public Library dedicated a building provided by Mr. Carnegie and the citizens of Springfield at a cost of \$355,000. While this expenditure does not rank it with the greater public library buildings in Chicago, Boston, New York, and St. Louis, the result is a building notable for the extreme care with which it has been planned for the specific combined purposes of library and museum, and for the minute attention to detail in construction. Rice Hall, the reference room, 86 ft. square, dominates the building, and is a most interesting example of central supervision with radial book cases in a room of this size. (See *Library Journal*, February, 1912.)

On March 23 the Doe Library (cost \$880,000) was dedicated to the use of the University of California. The increase in number of university

students in this country has been, and still is, so rapid that all college libraries built within 25 years have soon been far outgrown and there is now not one of the larger colleges or universities in the country which has wholly adequate library facilities. It is fortunate that this new California building is but one wing of the structure originally planned, for its accommodations for readers are already overtaxed.

On June 12 was dedicated the Harper Memorial Library of the University of Chicago, erected at a cost of about \$800,000. As plans for this building were in the making for nearly ten years, and as they have probably been considered by more professors and librarians than the plans of any other college library ever built, it should embody an ideal library equipment for a university constituency. A study of the building, however, and current report of it do not justify this expectation, and seem to support the contention that in the planning and building, as well as in the administration of a university library, a good architect and a competent librarian can do better than when the entire faculty are called into consultation.

On Oct. 17 was dedicated the New York State Education building (cost \$4,000,000), which provides a home for the New York State Library with its attendant activities, the Library School, and the Division of Educational Extension. The library quarters provide shelf room for nearly 3,000,000 volumes. The library as organized and installed in this building will consist of a great general reading room surrounded by four reading rooms and three large alcoves, devoted to the special libraries on law, medicine, documents, periodicals, technology, education, history. Features of the construction are the utilization of what would ordinarily be corridor space as book stacks between reading rooms, and the frank use of artificial light for

all book stacks and storage, reserving natural light everywhere for readers and staff. (See *Library Journal*, October, 1912, and *Education*, *supra*.)

Meetings.—Important library meetings during the year were those of the American Library Association at Ottawa, Canada, June 26-July 3 (attendance 704), which this year took on somewhat the character of an international gathering and drew special attention to library progress in Canada, especially in the Province of Ontario; the New York State Library Association at Niagara Falls the week of Sept. 23, the largest meeting ever held by this body (attendance 322), perhaps the largest state conference ever held in the country; the tri-state meeting at Atlantic City in March, always a notable gathering, this year attracting delegates from 12 states. The American Library Association elected as officers for the year 1912-13: Henry E. Legler, librarian Chicago Public Library; first vice-president, Edwin H. Anderson, assistant director, New York Public Library; second vice-president, Miss Mary F. Isom, librarian, Library Association, Portland, Ore.

Legislative reference work has been much discussed during the year. A bill (H. R. 18721) was introduced in Congress looking toward the establishment of a legislative reference bureau in the Library of Congress; and on Feb. 26-27 hearings were held by the House Committee on the Library, indicating the importance which such work has assumed in several states and in foreign countries. The bill did not become a law. Chicago, St. Louis, New York, and Oakland, Cal., have during the year either established or seriously considered such service in connection with their public libraries, and the extension of this work to all large cities seems definitely foreshadowed.

Hoe Sale.—The sale at auction of the four parts of the Robert Hoe library, probably the richest and most important private library ever collected, was completed during the year. A total of \$1,932,056.80 was realized. Such prices are so high that they cannot be said to represent intrinsic values. Libraries are

at a distinct disadvantage in bidding for such treasures in the face of prices which merely measure the emulation of multimillionaires.

New Library at Rochester.—Rochester, N. Y., one of the few remaining cities of over 200,000 population in the country until now without facilities for adequate library service, has during the year organized a free public library which has already begun its service in competent hands and under encouraging auspices. William F. Yust, who, during the past eight years, has successfully organized and developed a municipal library system for Louisville, Ky., has been made librarian.

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XXXV. CHRONOLOGY AND NECROLOGY

AMERICAN CHRONOLOGY

JANUARY

2.—The United States refuses the demand of five European countries for free entry of their wood pulp, print paper and paper board.

3.—Congress reassembles after the holiday recess.

5.—Dr. Rupert Blue is appointed Surgeon-General of the Public Health and Marine Hospital Service.

6.—The proclamation of New Mexico's statehood is signed by President Taft.

8.—The National Monetary Commission files with Congress its final report.

9.—The Democratic National Committee, in session at Washington, decides to convene the National Convention at Baltimore, June 25.

The building of the Equitable Life Assurance Society, New York, is totally destroyed by fire.

10.—The Kentucky Legislature elects Ollie M. James to the United States Senate, his term to begin in 1913.

11.—Robert Bacon, appointed a Fellow of Harvard University, resigns as Ambassador to France.

12.—An extensive strike of textile workers is declared in Lawrence, Mass.

15.—W. C. McDonald is inaugurated as the first Governor of the state of New Mexico.

A decision upholding the Federal Employers' Liability Act of 1908 is handed down by the Supreme Court.

16.—The United States warns Cuba that a continuance of political troubles will lead to a third intervention.

17.—The Mississippi Legislature elects James K. Vardaman to the U. S. Senate, his term to begin in 1913.

20.—The candidacy of Senator Albert B. Cummins, of Iowa, for the Republican presidential nomination is announced.

22.—The Congressional committee appointed to investigate the charges against Dr. Harvey W. Wiley reports "rely in his favor."

Cyrus E. Woods is appointed Minister to Portugal.

24.—The House of Representatives, by a vote of 148 to 82, passes a bill requiring the President to make public the indorsement of candidates for appointment to the federal judiciary.

The United Mine Workers of America, in convention at Indianapolis, vote to demand an increase of wages for both bituminous and anthracite miners.

25.—Joseph M. Brown is inaugurated Governor of Georgia.

27.—Champ Clark announces his candidacy for the Democratic presidential nomination.

28.—The Secretary of War announces a plan of army reform, involving the closing of several posts and concentration of troops at eight strategic points.

29.—The House passes the Underwood-Palmer bill for the revision of the iron and steel schedule of the Payne tariff.

Clarence Darrow is indicted by the Los Angeles Grand Jury on two charges of complicity in the attempted bribery of jurors in the McNamara case.

31.—The Senate passes the Borah bill creating a Children's Bureau in the Department of Commerce and Labor.

FEBRUARY

2.—The House of Representatives passes the bill appropriating \$152,000,000 for pensions.

The second legislature of the Philippines comes to an end; Governor Forbes issues a call for an extra session.

Giovanni Bonzano, Rector of the College of the Propaganda of the Faith, is appointed Papal Delegate to the United States.

3.—The rules of the House of Representatives are amended to restore much of the lost power of the Speaker.

The United States warns President Madero, of Mexico, that American

citizens and interests must be protected.

4.—President Taft suspends an order of the Commissioner of Indian Affairs relating to religious garb of teachers in Indian schools which had the effect of excluding from them members of religious orders.

5.—Four battallions of United States troops are dispatched to the Mexican border.

Charles S. Deneen, Governor of Illinois, announces himself as a candidate for the Republican presidential nomination.

6.—The Federal Grand Jury at Indianapolis returns 54 true bills against labor leaders charging complicity in dynamite outrages.

7.—President Taft nominates as ambassador to France, Myron T. Herrick, of Ohio.

The Philippine legislature ends its extra session without action on the appropriation bills.

9.—United States marines are landed in Honduras to protect American property.

10.—A committee of the Senate, appointed to investigate the election of Senator Isaac Stephenson, of Wisconsin, reports that the charges of corruption are unproved.

Representatives of 28 states, including eight governors, in conference at Chicago, urge Theodore Roosevelt to become a candidate for the Republican presidential nomination.

12.—Woodrow Wilson, Governor of New Jersey, at Chicago, formally opens his campaign for the Democratic presidential nomination.

14.—President Taft signs the proclamation admitting Arizona to statehood.

Forty-one labor leaders are arrested on federal warrants charging complicity in dynamite outrages.

15.—Major-Gen. F. C. Ainsworth, adjutant-general, U. S. A., is removed from office by order of President Taft.

The nomination of Myron T. Herrick as ambassador to France is confirmed by the Senate.

16.—At his own request, Major-Gen. Ainsworth is placed on the retired list, and the charges against him are dropped.

The House of Representatives passes the Army Appropriation bill, which provides for the abolition of five regiments of cavalry and a five-year term of enlistment.

18.—Señor Ospina, Colombian minister to the United States, advises the State Department that, in his opinion, the proposed visit of Secretary of State Knox to Colombia will be inopportune.

19.—Mahlon Pitney, Chancellor of New Jersey, is nominated to succeed

the late John M. Harlan as Associate Justice of the U. S. Supreme Court.

20.—President Taft transmits to Congress the report and proposed legislation of the Employers' Liability Commission.

21.—A bill revising the chemical schedule of the tariff passes the House of Representatives.

22.—One hundred miners lose their lives in a fire in a coal mine at Lehigh, Okla.

23.—Philander C. Knox, Secretary of State, leaves Key West for a visit to the Latin American republics bordering the Caribbean Sea.

24.—Additional United States troops are sent to El Paso, Texas, for the protection of American interests near the border.

25.—Theodore Roosevelt announces that he will accept the Republican presidential nomination if offered by the National Convention.

27.—Representatives of the anthracite miners formally present to the operators a demand for increased wages.

29.—The Department of State informs President Madero, of Mexico, that the exportation of military supplies to the insurgents cannot be prohibited.

MARCH

2.—President Taft warns Americans in Mexico to observe the neutrality laws.

4.—The House of Representatives passes a bill conferring United States citizenship on all citizens of Porto Rico.

5.—Anthracite coal operators, in session at New York, refuse the demands of the miners.

7.—The Senate amends and ratifies the arbitration treaties with Great Britain and France.

Additional United States troops are sent to the Mexican border.

12.—The House of Representatives passes the Agricultural appropriation bill.

A government suit against the Sugar Trust is begun at New York.

13.—The Senate passes a joint resolution authorizing President Taft to forbid the shipment of arms or munitions of war to American countries in which they may be applied to the promotion of domestic violence.

The Senate confirms the nomination of Mahlon Pitney to the Supreme Court bench.

14.—The House of Representatives concurs in the joint resolution increasing the President's power to enforce the neutrality laws.

President Taft forbids the shipment of arms into Mexico.

The strike of textile workers at Lawrence, Mass., is ended.

15.—Dr. Harvey W. Wiley resigns his post as Chief of the Bureau of Chemistry in the Department of Agriculture.

The House passes the Free Sugar bill by a vote of 198 to 103.

16.—The hulk of the battleship *Maine* is towed from Havana harbor to the open sea and sunk with impressive ceremonies.

19.—The House of Representatives passes the Rivers and Harbors bill carrying appropriations of \$26,000,000.

The House of Representatives by a vote of 252 to 40, passes the Excise Tax bill, imposing a tax on incomes of firms and individuals in excess of \$5,000.

The North Dakota presidential preference primary gives La Follette 28,600 votes; Roosevelt, 19,100; Taft, 1,500.

21.—The Indiana Democratic Convention instructs its delegates to the National Convention to vote for Governor Thomas R. Marshall for President.

22.—W. A. F. Ekengren is appointed Minister to the United States from Sweden.

23.—The human remains removed from the wreck of the *Maine* are interred in the Arlington National Cemetery.

Serious floods occur in the Mississippi below Cairo, Ill.

24.—The law forbidding the exportation of munitions of war to Mexico is modified to relieve the Mexican Government from its provisions.

26.—President Taft transmits to the House of Representatives the report of the Tariff Board on the cotton schedule.

The Arizona legislature elects to the United States Senate Marcus A. Smith (Dem.) and Henry F. Ashurst (Dem.).

Roosevelt supporters withdraw from the Indiana Republican Convention controlled by Taft forces, and hold a separate convention.

The jury in the Government's suit against the Chicago meat packers decides that the Sherman Act was not violated.

27.—The Senate, by a vote of 40 to 34, exonerates Isaac Stephenson, of Wisconsin, of charges of corruption in his election.

The New Mexico legislature elects to the United States Senate Albert B. Fall (Rep.) and Thomas B. Catron (Rep.).

Julio Betancourt is appointed Minister to the United States from Colombia.

28.—The House of Representatives

passes a bill placing a prohibitive tax on white phosphorus matches.

The Senate committee appointed to investigate the election of William Lorimer of Illinois decides, by a vote of five to three, that no evidence of corruption was found.

29.—The Senate passes the Smoot pension bill substituted for the Sherwood House measure.

The War Department sends 1,000 rifles to the United States legation in Mexico City for the use of Americans in Mexico.

30.—Flood conditions are general along the Mississippi, Missouri and Ohio Rivers.

31.—The jury in the Government's suit against the Sugar Trust fails to agree.

A strike of more than 400,000 coal miners in the anthracite and bituminous fields begins.

APRIL

1.—The House of Representatives, by a vote of 189 to 92, passes a bill revising the wool schedule of the tariff.

2.—The House of Representatives passes a bill creating a Children's Bureau in the Department of Commerce and Labor.

The new members from Arizona and New Mexico take their seats in the Senate.

The Republican presidential preference primary in Wisconsin gives La Follette 131,920 votes to Taft's 47,630; the Democratic primary gives 45,500 votes to Woodrow Wilson and 36,250 to Champ Clark.

8.—Newell Sanders (Rep.) is appointed to the United States Senate from Tennessee for the unexpired term of the late Robert L. Taylor.

9.—The House of Representatives passes the Indian appropriation bill providing for the expenditure of \$7,500,000.

The Republican presidential primary in Illinois gives Roosevelt a majority of 115,000 over Taft; the Democratic primaries give Wilson 125,000 majority over Clark.

10.—The New York Republican Convention urges the delegates at large to support Taft in the national convention.

The ten Maine delegates to the Republican National Convention are pledged to Theodore Roosevelt.

Ira Remsen resigns the presidency of Johns Hopkins University.

11.—Roosevelt supporters withdraw from the Michigan Republican Convention and elect a contesting delegation to the national convention.

12.—The Senate passes the Army and Diplomatic and Consular appropriation bills.

13.—The Republican presidential primary in Pennsylvania gives Roosevelt a large majority over Taft.

14.—Strong warnings are issued to the Mexican Government and to the revolutionary forces that the lives and property of American citizens must be respected.

17.—The Senate orders an investigation of the causes of the *Titanic* disaster.

President Taft nominates Julia Lathrop to be head of the new Children's Bureau in the Department of Commerce and Labor.

Secretary Knox reaches Washington from his visit to the Central American republics.

The Connecticut Republican Convention instructs four delegates at large for President Taft.

The Alabama Democratic Convention instructs its delegates to the national convention for Oscar W. Underwood.

18.—The Cunard liner *Carpathia* arrives at New York with the 705 survivors of the *Titanic* disaster.

19.—The Senate passes the Dillingham Immigration bill establishing a literacy test for admission to the United States.

A committee of the Senate begins an inquiry into the causes of the *Titanic* disaster.

The Republican presidential primary in Oregon gives Roosevelt 25,400 votes, La Follette 20,200, and Taft 18,220; Woodrow Wilson is the choice in the Democratic primary.

The Republican presidential primary in Nebraska gives Roosevelt 35,545 votes, and about 11,800 each to Taft and La Follette; Clark is the choice in the Democratic primary.

20.—The House of Representatives passes a bill requiring publicity of contributions and expenditures in behalf of candidates for the offices of president and vice-president.

23.—The Republican presidential primary in New Hampshire gives Taft a majority of the delegates to the national convention.

24.—The Rhode Island Republican Convention instructs its ten delegates to the national convention for Taft.

The Iowa Republican Convention instructs four delegates at large to the national convention for Taft.

25.—The House of Representatives confers additional powers on the Committee on Banking and Currency for an investigation of the existence of a money trust.

The Missouri Republican Convention instructs its eight delegates at large to

the national convention for Roosevelt.

27.—The Committee on Banking and Currency of the House of Representatives begins an investigation into the existence of a money trust.

29.—The Senate orders an inquiry into the contributions and expenditures in the presidential campaigns of 1904 and 1908.

The Government begins a suit under the Sherman Act against the International Harvester Company.

30.—The Republican presidential primary in Massachusetts gives Taft a small majority over Roosevelt.

The Democratic presidential primary in Florida declares for Oscar W. Underwood.

MAY

1.—The Pennsylvania Republican Convention instructs 12 delegates at large to the national convention for Theodore Roosevelt.

The Democratic presidential primary in Georgia gives Oscar W. Underwood a majority of 8,000 over Woodrow Wilson.

Theodore Roosevelt releases to President Taft eight instructed delegates at large from Massachusetts.

2.—The House of Representatives passes the Post Office Appropriation bill, providing for expenditures of \$260,000,000 and authorizing the establishment of an experimental rural parcels post.

4.—The Republican precinct conventions in Texas give Theodore Roosevelt a majority of the delegates to the national convention.

6.—The Senate passes the Employers' Liability and Workmen's Compensation bill.

The Republican presidential primary in Maryland gives Roosevelt 29,124 votes and Taft 26,000; Clark is the choice in the Democratic primary.

The Nevada Republican Convention instructs its six delegates to the national convention for President Taft.

7.—The Senate accepts the conference report on a substitute Pension bill.

8.—The Kansas Republican Convention instructs its four delegates at large to the national convention for Theodore Roosevelt.

9.—The Senate amends and passes the Rivers and Harbors Appropriation bill, providing for expenditures of \$34,000,000.

10.—The House of Representatives passes the Legislative, Executive and Judicial Appropriation bill, which provides no funds for the continuance of the Commerce Court.

The House of Representatives ac-

cepts the conference report on a substitute Pension bill.

11.—John Grier Hibben is inaugurated as president of Princeton University.

12.—The House of Representatives accepts the Senate's amendments to a bill providing for the direct election of United States senators.

The Wyoming Republican Convention instructs its six delegates to the national convention for President Taft.

14.—The House of Representatives, by a vote of 244 to 31, passes the Clayton bill prohibiting the issuing of injunctions without notice.

The Republican presidential primary in California gives Roosevelt a majority of 60,000 over Taft; in the Democratic primary Champ Clark defeats Woodrow Wilson.

16.—The Senate amends and passes the Agricultural Appropriation bill.

The Minnesota Republican Convention instructs its 24 delegates to the national convention for Theodore Roosevelt.

The West Virginia and Washington Republican Conventions instruct their delegates at large to the national convention for Theodore Roosevelt.

The South Carolina Democratic Convention indorses Woodrow Wilson.

The Maryland Democratic Convention indorses Champ Clark.

The Iowa Democratic Convention instructs its 26 delegates to the national convention for Champ Clark.

17.—The Socialist National Convention, in session at Indianapolis, nominates Eugene V. Debs, of Indiana, for President, and Emil Seidel, of Wisconsin, for Vice-President.

Alexander Meiklejohn, dean of Brown University, is elected president of Amherst College.

18.—The House of Representatives confers additional powers on the Committee on Banking and Currency for the investigation of the money trust.

The Government brings suit under the Sherman Act against an alleged Coffee Trust.

The anthracite coal miners, in convention at Wilkes-Barre, vote to accept the wage schedule offered by the operators.

The battleship *Texas* is launched at Newport News.

20.—The Senate committee appointed to investigate the election of William Lorimer of Illinois reports that the charge that it was obtained by corrupt methods is not substantiated.

An agreement is signed at Philadelphia between representatives of anthracite miners and operators.

21.—Joseph E. Ransdell (Dem.) and Robert F. Broussard (Dem.) are elect-

ed to the United States Senate from Louisiana for the terms beginning 1913 and 1915, respectively.

The Republican presidential primary in Ohio gives 34 delegates to the national convention to Theodore Roosevelt by a majority of over 30,000 votes; the choice of the Democratic primary is Judson Harmon.

22.—A conference committee of the Senate and House of Representatives on the Army Appropriation bill adopts an amendment which makes Major-General Leonard Wood ineligible as Chief of Staff.

23.—The House of Representatives passes the Panama Canal bill, admitting American-owned ships free and debarring vessels owned directly or indirectly by railroads.

Two battalions of United States marines are sent to Cuba to protect American interests.

25.—A squadron of nine United States warships is ordered to assemble at Key West for service in Cuba.

27.—President Taft reassures President Gomez of Cuba as to the possibility of intervention by the United States.

28.—The House of Representatives passed the Naval Appropriation bill, providing for expenditures of \$119,000,000, but authorizing no new battleships.

The special committee of the Senate appointed to investigate the causes of the *Titanic* disaster makes its report.

The Republican presidential primary in New Jersey gives Roosevelt a majority of 16,000 votes over Taft; the choice of the Democratic primary is Woodrow Wilson.

Seven hundred American marines are landed at Guantanamo, Cuba.

30.—The Senate passes the bill revising the steel schedule of the tariff, with an amendment repealing the Canadian Reciprocity Act.

31.—The Senate, by a vote of 49 to 11, passes the bill prescribing an eight-hour day for labor on all Government contracts.

JUNE

1.—An American gunboat and a small force of marines are dispatched to El Cobre, Cuba, for the protection of the lives and property of American citizens.

3.—Three German warships, the battleship *Moltke* and the cruisers *Stettin* and *Bremen*, under the command of Rear-Admiral von Rebeur-Paschwitz, are received in Hampton Roads by President Taft.

4.—The Republican presidential primary in South Dakota gives 33,600 votes to Roosevelt, 17,900 to La Follette, and 10,100 to Taft.

By a vote of 390 to 362, the Ohio State Republican Convention indorses President Taft and instructs the state's six delegates at large for him.

6.—The Republican National Committee begins its sessions at Chicago; Victor Rosewater, of Nebraska, is elected chairman.

7.—The Republican National Committee, in session at Chicago, decide the cases of 24 contested delegates to the national convention in favor of Taft supporters.

The battleships *Ohio* and *Minnesota* arrive at Guantanamo, Cuba.

8.—The Republican National Committee decide the cases of 48 contesting delegates from Arkansas, Florida and Georgia in favor of President Taft.

9.—The visiting German warships enter New York harbor.

10.—The Senate, by a vote of 27 to 24, adopts the conference report on the Army appropriation bill.

The Republican National Committee decide the cases of 12 contested delegates from Indiana in favor of President Taft.

The battleship *Rhode Island* and the cruiser *Washington* arrive in Havana harbor.

11.—The Republican National Committee decide the cases of 17 contested delegates from Kentucky in favor of President Taft and one in favor of Mr. Roosevelt.

12.—The Senate passes the amendment to the Legislative, Executive and Judicial appropriation bill repealing the act creating the Court of Commerce.

The Republican National Committee decide the cases of 20 contesting delegates from Louisiana, six from Arizona, six from Michigan, six from Mississippi, and two from California, in favor of President Taft.

13.—The House, by a vote of 121 to 92, accepts the conference report on the Army Appropriation bill.

The Republican National Committee decide the cases of 12 contested delegates from Mississippi and six from Missouri in favor of President Taft, and of eight from Missouri in favor of Mr. Roosevelt.

The U. S. Circuit Court at Wilmington, Del., orders the dissolution of the Powder Trust.

The visit of the German squadron is ended.

14.—The Republican National Committee decide the cases of six contested delegates from Oklahoma and Tennessee in favor of President Taft.

15.—The Republican National Committee decide the cases of 26 contested delegates from Texas, 20 from Virginia, 14 from Washington, and two from the District of Columbia in favor of Presi-

dent Taft; and of four from Texas and two from North Carolina in favor of Mr. Roosevelt.

16.—Wind storms in the Middle West cause large loss of life and damage to property.

17.—President Taft vetoes the Army appropriation bill.

The National Packing Company, the "Beef Trust," informs the Department of Justice that it will dissolve by Aug. 1.

18.—The Republican National Convention begins its sessions in Chicago; Senator Elihu Root is elected temporary chairman by a vote of 558 to 502.

19.—The Republican National Convention votes to refer to the committee on credentials Governor Hadley's resolution to substitute 72 contesting Roosevelt delegates for Taft delegates seated by the National Committee, defeating by a vote of 564 to 510 an amendment that none of the 72 men whose seats were contested should vote either for the election of the Committee on Credentials or on the report of the Committee.

20.—The Republican National Convention meets only to adjourn, to await the report of the Committee on Credentials. The Committee seats 26 contested Taft delegates from Florida, Alabama, Arkansas, Arizona and Georgia.

21.—The House of Representatives passes the Sundry Civil appropriation bill, providing for expenditures of \$109,577,414.

The Republican National Convention approves reports of the Committee on Credentials; the Committee has seated 207 contested Taft delegates and 15 Roosevelt delegates.

22.—William Howard Taft is re-nominated for President by the Republican National Convention by a vote of 561; James Schoolcraft Sherman for Vice-President by a vote of 597; a platform is adopted by a vote of 666.

Theodore Roosevelt is informally nominated for President at Chicago by a rump convention of Roosevelt delegates to the Republican National Convention.

23.—Thirty-nine persons are drowned in the Niagara River, following the collapse of a pier at a recreation park near Buffalo.

An outbreak of bubonic plague in Porto Rico is reported.

24.—The Supreme Court of the District of Columbia reaffirms sentence of imprisonment on Samuel Gompers, John Mitchell, and Frank Morrison for contempt of court.

25.—The Democratic National Convention begins its sessions in Baltimore; Alton B. Parker is elected tem-

porary chairman over William J. Bryan by a vote of 579 to 510.

26.—Frederick W. Lehmann resigns as solicitor-general in the Department of Justice.

The Democratic National Convention rejects the unit rule and decides to nominate the candidates before the platform is adopted.

27.—The Democratic National Convention accepts a minority report of the Committee on Credentials, seating 10 Wilson delegates instead of 10 Clark delegates.

28.—After an all-night session, the Democratic National Convention reaches a first ballot at 7 A. M.; the vote is Clark, 440½; Wilson, 324; Underwood, 117½; Harmon, 148; Marshall, Baldwin, Sulzer and Bryan, 56. The convention reconvenes at 4 P. M.

29.—The Democratic National Convention adjourns at 3 A. M., after taking the twelfth ballot; it reconvenes at 1 P. M. and remains in session until the twenty-sixth ballot is taken at 11 P. M.

JULY

1.—A joint resolution of Congress appropriates for the month of July sums equal to one-twelfth of the appropriations for the necessary operations of the government during the fiscal year 1912.

President Taft nominates William Marshall Bullitt of Kentucky to be Solicitor-General of the United States.

The Democratic National Convention holds two sessions without making a nomination.

2.—The House of Representatives again passes the Army appropriation bill without the clause legislating Major-General Wood out of office as Chief of Staff.

The Democratic National Convention adjourns at 1 A. M. after the forty-second ballot; it reconvenes at 12 M. and at 3.30 P. M. nominates Woodrow Wilson for President on the forty-sixth ballot; the vote is, Wilson, 990; Clark, 84; Harmon, 12, afterward made unanimous. The convention adjourns and reconvenes at 9.30 P. M.

The dirigible balloon "Akron" explodes at a height of 2,000 feet at Atlantic City, killing its designer, Melvin Vaniman and crew of four.

3.—The Senate rejects a bill revising the chemical schedule of the tariff.

A. Platt Andrew resigns his post as Assistant Secretary of the Treasury.

The Democratic National Convention at 2 P. M. nominates Thomas R. Marshall, Governor of Indiana, for vice-president by acclamation after two ballots have been taken. The convention

adopts a platform and adjourns *sine die*.

4.—Forty-one persons are killed and over 50 injured in a rear-end collision on the Delaware, Lackawanna & Western Railroad near Corning, N. Y.

5.—The Senate passes the Naval Appropriation bill, with an amendment providing for the construction of two battleships.

President Taft nominates Col. Frank McIntyre as Chief of the Bureau of Insular Affairs with the rank of Brigadier-General.

Twenty-one persons are killed and over 30 injured in a rear-end collision on the Ligonier Valley Railroad near Ligonier, Pa.

7.—A call is issued for a convention of the "National Progressive Party" in Chicago on Aug. 5 to nominate candidates for President and Vice-President.

11.—The House of Representatives adopts resolutions of impeachment in the case of Judge Robert W. Archbald of the Commerce Court, accused of improper business transactions while on the bench.

Great Britain requests diplomatic consideration of the provision in the pending Panama Canal bill granting free passage to American ships.

13.—The Senate, by a vote of 55 to 28, declares vacant the seat held by William Lorimer, of Illinois.

Great Britain protests further against the provision of the Panama Canal bill barring railroad-owned ships from the Canal.

Charles D. Hilles resigns as Secretary to the President to manage the Taft campaign as chairman of the National Republican Committee.

14.—The Interstate Commerce Commission issues a report prescribing reductions in express rates and changes in operating methods of express companies.

Thirteen persons are killed and more than 25 injured in a rear-end collision on the Chicago, Burlington & Quincy Railroad near Chicago.

A flood following a cloudburst causes several deaths and large property damage at Denver, Col.

15.—The Democratic National Committee chooses as chairman and manager of Woodrow Wilson's presidential campaign William F. McCombs, of New York.

The National Prohibition Party, in convention at Atlantic City, nominates Eugene W. Chafin for President and Aaron S. Watkins for Vice-President.

16.—The Senate summons Judge Archbald to appear before it July 19 in the impeachment proceedings.

The House passes a measure making it unlawful to deal in cotton futures.

AUGUST

Herbert Knox Smith, Commissioner of Corporations, resigns his post to support Theodore Roosevelt's campaign for the presidency.

Herman Rosenthal, a confessed gambler about to make revelations of corruption in the New York police department, is shot and killed in the street by five men, who escape in an automobile.

17.—The House passes a bill creating a Department of Labor in the federal Government.

President Taft nominates Luther C. C. of New York to be Commissioner of Corporations, and Sherman P. Allen of Vermont as Assistant Secretary of the Treasury.

19.—Judge Archbald appears before the Senate and is given ten days in which to file an answer to the articles of impeachment.

20.—The National Packing Company, the "Beef Trust" makes public its plan of dissolution.

23.—The Senate amends the Sundry Civil appropriation bill to provide funds for the continuance in office of the Tariff Board.

24.—The Senate passes the Sundry Civil Appropriation bill, providing for expenditures of \$116,000,000, and a measure creating a legislature for the Territory of Alaska.

Cloudbursts and floods in Pennsylvania and West Virginia cause more than 60 deaths by drowning.

25.—The Senate passes the La Follette bill revising the wool schedule of the tariff and providing for the establishment of a permanent tariff commission.

The United States marines are withdrawn from Guantanamo, Cuba.

26.—The Senate, by a vote of 37 to 18, passes the Excise bill, levying a tax on the net earnings of individuals and partnerships in excess of \$5,000 per year.

Thirteen Detroit aldermen and the secretary of the Common Council Committee are trapped in accepting bribes.

27.—The Senate, by a vote of 52 to 3, passes the Republican bill revising the sugar schedule of the tariff.

28.—The United States warns General Orozco that he must be prepared to take the consequences of further attacks on Americans in northern Mexico; President Madero is urged to make adequate provision for the protection of American property.

29.—The Senate receives Judge Archbald's answer to the impeachment charges against him.

Lieut. Charles Becker, of the New York police force, is indicted for instigating the murder of Herman Rosenthal.

1.—President Taft accepts the Republican nomination for a second term.

2.—The Senate, by a vote of 51 to 4, adopts a resolution applying the Monroe Doctrine to the acquisition by foreign corporations of sites on the American continent capable of being converted into military or naval bases threatening the security or communications of the United States.

The House passes the Underwood bill revising the cotton schedule of the tariff.

The Stanley Committee, appointed to investigate the United States Steel Corporation, presents its report.

3.—The House adopts the conference report on the bill revising the wool schedule of the tariff.

5.—The Senate, by a vote of 35 to 28, passes the compromise bill revising the wool schedule of the tariff.

The convention of the National Progressive Party begins its sessions at Chicago.

6.—Rolla Wells of Missouri is selected as treasurer of the Democratic National Committee.

7.—The Senate, by a vote of 44 to 11, refuses to strike from the Panama Canal bill the provision granting free passage to American ships; the Senate passes the Agricultural, and the Legislative, Executive, and Judicial appropriation bills.

The Senate rejects the Pension appropriation bill.

Woodrow Wilson accepts the Democratic nomination for President.

The National Progressive Party, in convention at Chicago, nominates Theodore Roosevelt for President and Hiram W. Johnson, of California, for Vice-President.

8.—The Senate amends the Panama Canal bill to extend the exemption from tolls granted to coastwise ships to vessels in the foreign trade, and to admit foreign-built ships in the foreign trade, if owned by Americans, to American registry.

The House passes the Agricultural, General Deficiency, and Legislative, Executive, and Judicial appropriation bills.

9.—The Senate, by a vote of 47 to 15, passes the Panama Canal bill.

President Taft vetoes the compromise bill revising the wool schedule of the tariff.

10.—The House passes a bill requiring all ocean-going vessels to be equipped with lifeboats sufficient to carry all persons on board.

12.—The House unseats Theron Catlin, a representative from Missouri, for excessive pre-election expenditures.

13.—The Senate passes the Post Office appropriation bill.

The House, by a vote of 174 to 80, passes over the President's veto the compromise bill revising the wool schedule of the tariff.

President Taft nominates Jacob Gould Schurman, President of Cornell University, to be Minister to Greece, to succeed George H. Moses, resigned.

14.—The Senate passes the bill revising the cotton schedule of the tariff.

The Senate passes the Army appropriation bill, providing for expenditures of \$94,000,000, without the clause legislating Gen. Leonard Wood out of office as Chief of Staff.

President Taft vetoes the Underwood bill revising the steel and metal schedule of the tariff; the House, by a vote of 173 to 83, passes the bill over the President's veto.

15.—The Senate, by a vote of 42 to 18, ratifies the fur-seal treaties with Japan, Great Britain and Russia.

The Senate passes a resolution creating a commission on industrial relations.

President Taft vetoes the Legislative, Executive and Judicial appropriation bill because of provisions abolishing the Commerce Court and establishing a seven-year tenure of office in the civil service.

16.—The Senate fails to pass the bills revising the wool and metal schedules of the tariff over the President's veto; the Senate adopts the compromise report on the Panama Canal bill.

17.—The House adopts the conference report on the Panama Canal bill, and passes the Legislative, Executive and Judicial appropriation bill without the clause prescribing a seven-year tenure of office in the civil service.

19.—The Senate passes the Legislative, Executive, and Judicial appropriation bill, and adopts the conference report on the Naval appropriation bill authorizing the construction of one battleship.

20.—The House adopts the conference report on the Naval appropriation bill.

Thomas R. Marshall at Indianapolis formally accepts the Democratic nomination for Vice-President.

21.—President Taft again vetoes the Legislative, Executive, and Judicial appropriation bill; it is again passed by the House with a clause providing for the support of the Commerce Court until March 4, 1913.

22.—The Senate passes the Legislative, Executive, and Judicial appropriation bill for the third time, and adopts conference reports on the Indian and Sundry Civil appropriation bills.

23.—The Senate adopts conference

reports on the Army and Post Office appropriation bills, and passes the General Deficiency appropriation bill; the House adopts conference reports on the Army, Indian, and Sundry Civil appropriation bills.

John D. Archbald testifies before the Senate committee investigating campaign funds as to contributions of the Standard Oil Company to Theodore Roosevelt's campaign of 1904.

24.—President Taft signs the Panama Canal bill.

26.—The Senate adopts a resolution broadening the scope of the investigation into campaign contributions; after a long deadlock both branches pass the General Deficiency appropriation bill.

The second session of the Sixty-second Congress is adjourned.

28.—Great Britain presents a note of protest against the granting to American vessels of free passage through the Panama Canal.

29.—The U. S. battleship *California* arrives at Corinto, Nicaragua, with reinforcements of marines; a regiment of infantry is ordered to Nicaragua by President Taft, but the order is countermanded later.

30.—William M. Wood, president of the American Woolen Co., is arrested on charges of conspiracy in connection with the use of dynamite in a strike at Lawrence, Mass.

31.—The Interstate Commerce Commission suspends until Dec. 31 proposed increases in freight rates from eastern points to the Pacific Coast.

Col. C. P. Townsley succeeds General Barry as superintendent of the U. S. Military Academy.

SEPTEMBER

2.—Storms cause the loss of 36 lives and large property damage in Pennsylvania, Ohio, and West Virginia.

3.—In the state election in Vermont no candidate for governor receives a majority of the votes and the election is thrown into the Legislature.

An election on 42 amendments to the constitution is held in Ohio.

9.—State elections in Maine result in a victory for the Republicans; William T. Haines is elected governor.

In the state election in Arkansas, Joseph T. Robinson (Dem.) is elected governor.

10.—Robert G. Valentine resigns as Commissioner of Indian Affairs.

11.—The Southern Pacific Railway appeals to the Government to protect its employees and property in Mexico.

13.—The Secretary of the Interior cancels the Cunningham claims to Alaskan coal lands.

19.—Dr. Konstantin Theodor Dumba

is nominated Ambassador of Austria-Hungary to the United States.

24.—President Taft appoints a commission to investigate conditions on the Dominican-Haitian border.

27.—Augusta, Ga., is placed under martial law because of rioting in connection with a strike of street-railway employees.

30.—The Senate committee investigating campaign contributions reassembles at Washington.

Serious rioting occurs in the course of a 24-hour strike at Lawrence, Mass.

OCTOBER

2.—The Vermont Legislature elects the entire Republican state ticket, headed by Allen M. Fletcher for Governor.

3.—The California Supreme Court rules that the names of Taft electors cannot be printed on the ballot as Republicans.

Nine are killed and more than 20 injured in a wreck on the New York, New Haven and Hartford Railroad at Westport, Conn.

4.—Theodore Roosevelt testifies before the Senate Investigating Committee as to trust contributions to his 1904 campaign.

6.—The battleships of the Atlantic Fleet arrive at New York and anchor in the Hudson.

10.—The Nobel prize for medicine is awarded to Dr. Alexis Carrel, New York.

11.—The jury in the Danbury haters case finds a verdict for the plaintiff for \$80,000 and costs.

12.—Several hundred prisoners mutiny in the state penitentiary at Rawlins, Wyoming.

14.—Theodore Roosevelt is shot and seriously wounded at Milwaukee by one John Schrank.

President Taft reviews the fleet of 123 warships assembled in the Hudson at New York.

15.—President Taft by executive order places all fourth-class postmasters in the civil service.

16.—The third legislature of the Philippine Islands is inaugurated.

Alexander Meiklejohn is inaugurated president of Amherst College.

20.—The U. S. cruiser *Des Moines* arrives at Vera Cruz, Mexico.

21.—Theodore Roosevelt leaves the hospital in Chicago and starts for New York.

24.—Lieut. Charles Becker, of the New York police, is convicted of the murder of Herman Rosenthal, a gambler shot in a New York street on July 26.

30.—James Schoolcraft Sherman,

Vice-President of the United States, dies at his home in Utica, N. Y.

Theodore Roosevelt resumes his campaign for the Presidency, interrupted by the attack on his life, in a speech in Madison Square Garden, New York.

The U. S. cruiser *Baltimore* is ordered to Santo Domingo.

The U. S. battleship *New York* is launched at New York.

31.—Woodrow Wilson makes the final speech of his campaign in Madison Square Garden, New York.

NOVEMBER

2.—The funeral of James Schoolcraft Sherman is held at Utica, N. Y.

4.—The U. S. Supreme Court announces an extensive revision of procedure in equity practice in federal courts.

5.—Elections are held throughout the United States; Woodrow Wilson is elected President, and Thomas R. Marshall Vice-President.

8.—President Taft orders the cruisers *Tennessee* and *Montana* to Turkish waters for the protection of American citizens.

10.—James Bryce, Ambassador from Great Britain, notifies President Taft of his resignation; Sir Cecil Arthur Spring-Rice is nominated as his successor.

11.—The resignation of Charles Page Bryan as Ambassador to Japan is officially announced at Washington.

Fourteen persons are killed and 90 injured in a wreck on the Yazoo and Mississippi Valley Railroad near Mountz, La.

12.—The U. S. S. *Montana* and *Tennessee* sail from Philadelphia for Turkish waters, under command of Rear-Admiral Austin M. Knight.

13.—President Taft issues a proclamation fixing the rate of toll for vessels using the Panama Canal.

Fifteen persons are killed and 17 seriously injured in a wreck on the Cincinnati, Hamilton & Dayton Railway near Indianapolis, Ind.

14.—Lee McClung resigns as Treasurer of the United States.

Larz Anderson, U. S. Minister to Belgium, is appointed Ambassador to Japan.

15.—Woodrow Wilson announces his intention of calling an extra session of Congress in April, 1913.

An agreement supplemental to the Newfoundland fisheries arbitration award is concluded at Washington between Great Britain and the United States.

16.—Woodrow Wilson sails for Bermuda for a month's vacation.

18.—The U. S. Supreme Court declares the Bathtub Trust a combination

in restraint of trade and orders its dissolution.

21.—Andrew Carnegie announces the establishment of a fund to provide for future ex-Presidents of the United States and their unmarried widows annual pensions of \$25,000.

22.—It is announced that Theodore Marburg, of Maryland, will succeed Lars Anderson as Minister to Belgium.

23.—A board of arbitration publishes its report and award on the wages of engineers on 52 railroads.

27.—Two persons are killed and 30 injured in a wreck on the Pennsylvania Railroad near Glen Loch, Pa.

29.—William P. Jackson is appointed U. S. senator from Maryland, to succeed Isidore Rayner, deceased.

DECEMBER

2.—The third session of the Sixty-second Congress opens.

The Supreme Court declares the merger of the Union Pacific and Southern Pacific Railroad Companies an illegal combination and orders its dissolution.

3.—President Taft sends a special message to Congress on the foreign policy of his administration.

Impeachment proceedings against Judge Robert W. Archbald are begun in the U. S. Senate.

The fifth annual conference of governors opens at Richmond, Va.

Eight persons are killed and seven injured in a wreck on the Pennsylvania Railroad near Dresden, Ohio.

6.—President Taft transmits his annual message to Congress.

9.—The House passes the Legislative, Executive and Judicial Appropriation bill, carrying appropriations of \$34,900,583, without provision for the Commerce Court.

Great Britain presents a formal protest against the granting to American coastwise vessels of free passage through the Panama Canal.

A conference of the Progressive party opens at Chicago.

A 14-inch gun under test bursts at the Sandy Hook proving grounds.

10.—Theodore Roosevelt is nominated at the Chicago convention of the Progressive party as the Progressive candidate for President in 1916.

11.—The battleship *New Hampshire* is ordered to Santo Domingo.

12.—The election of Charles C. Bowman, representative in Congress from the Eleventh District of Pennsylvania since 1911, is declared invalid by the House of Representatives.

13.—William Sulzer, Governor-elect of New York, resigns his seat in the House of Representatives, to take effect Dec. 31.

15.—Whitelaw Reid, American Ambassador to Great Britain, dies in London.

16.—The Senate elects as alternating presidents *pro tempore* for the remainder of the session, Augustus O. Bacon of Georgia and Jacob M. Gallinger of New Hampshire.

President Taft approves the appointment of Dr. Carl L. Alsberg as chief of the Bureau of Chemistry in the Department of Agriculture.

The Supreme Court hands down a decision declaring that the Government has not proved the existence of an Anthracite Coal Trust of coal-carrying railroads, but ordering the dissolution of the interests controlling the Temple Iron Company.

Woodrow Wilson arrives at New York from Bermuda.

17.—President Taft sends to the Senate nominations for the Commission on Industrial Relations.

18.—The House of Representatives passes the Burnett Immigration bill imposing a literacy test on immigrants.

J. Pierpont Morgan testifies before the "Money Trust" investigating committee.

19.—President Taft sends a message to Congress recommending legislation on railway mail pay, public lands, and the civil service.

Both houses of Congress adjourn until Jan. 2, 1913.

Montgomery Schuyler, of New York, is nominated as minister to Ecuador.

President Taft leaves Washington for the Canal Zone.

23.—A federal grand jury indicts Charles S. Mellen, E. J. Chamberlain, and Alfred W. Smithers for violating the Sherman Act in entering into agreements regarding the handling of freight traffic by the New Haven and Grand Trunk Railroads.

24.—President Taft arrives at Colon.

28.—The jury in the trial of the ironworkers at Indianapolis return a verdict of guilty in the case of 38 defendants.

29.—A strike of 75,000 garment workers is declared in New York.

30.—It is announced that after Feb. 1, 1913, the Government will accept receipts and make disbursements by check.

Thirty-three of the convicted ironworkers are sentenced at Indianapolis to prison terms.

31.—The treaty of 1832 with Russia lapses at midnight.

Cipriano Castro arrives at New York and is detained at Ellis Island.

Three officials of the New Haven Railroad are arrested on warrants charging them with manslaughter on account of the wreck at Westport on Oct. 3.

FOREIGN CHRONOLOGY

JANUARY

1.—Sun Yat-sen is inaugurated Provisional President of the Chinese Republic; his first official act is to change the Chinese calendar.

Interior provinces of Ecuador revolt against the presidency of General Montero.

Daniel Howard is inaugurated President of Liberia.

2.—Yuan Shih-kai accepts the resignation of Tang Shao-yi, his representative in the peace negotiations.

3.—The fourth Central American Congress opens at Managua, Nicaragua. A new Turkish Cabinet is formed with Said Pasha as Premier.

4.—Chinese revolutionists win an important victory over Imperial troops near Hankau.

6.—The powers undertake to protect railway communication between Peking and the sea.

7.—Seven Turkish gunboats are sunk by an Italian cruiser squadron in a naval engagement in the Red Sea, off Kunfda.

8.—Russia demands the withdrawal of Chinese from the seceded portion of Mongolia.

9.—Justin de Selves, French Minister of Foreign Affairs, resigns from the Caillaux Cabinet, refusing to confirm the Premier's statement that no secret negotiations had occurred between French and German financiers relative to the settlement of the Moroccan dispute.

10.—Joseph Caillaux, the French Premier, and his cabinet resign.

After beginning military operations to clear Mongolia of wandering bands of Chinese, Russia announces her willingness to arbitrate the question.

11.—W. Morgan Shuster leaves Teheran, Persia, for the United States.

12.—M. Mornard, the Belgian ex-Director of Persian Customs, is appointed Treasurer-General of Persia; the Americans who accompanied W. Morgan Shuster to Persia ask the assistance of the Department of State in adjusting their claims against the Persian Government, declining to serve under M. Mornard.

13.—Raymond Poincaré accepts the Premiership of France.

The Turkish Chamber of Deputies rejects the government's plan for the amendment to the constitution.

14.—Premier Canalejas of Spain and his Cabinet resign as a consequence of the controversy over the Cullera murder case.

15.—Following reports of severe fighting between the revolutionists and

government forces, the U. S. cruiser *Maryland* is ordered to Guayaquil, Ecuador.

16.—The *Carthage*, a French mail steamer, is arrested by Italian warships in the Mediterranean charged with carrying contraband of war.

A resolution of confidence in the new Poincaré ministry passes the French Chamber of Deputies by a vote of 440 to six.

An attempt is made to assassinate Yuan Shih-kai by means of a bomb thrown at his carriage in the streets of Peking.

18.—A ballot of the British Miners' Federation approves a general strike on March 1.

The Turkish Chamber of Deputies is dissolved.

19.—A second French steamship, the *Manowba*, is arrested by Italian warships as a contraband suspect; on the demand of France the *Carthage* is released.

The lockout in the English cotton industry is ended and the strikers return to work.

The Chinese revolutionists present an ultimatum to Yuan Shih-kai demanding the abdication of the throne; the republican government appeals to the powers for recognition.

22.—Luis Mena, President of Nicaragua, resigns, his election having been declared illegal.

Following a severe defeat near Guayaquil, Ecuador, the revolutionists come to terms with the government.

A conference of Manchu princes decides against the abdication of the Chinese Emperor.

23.—France threatens to break off diplomatic relations with Italy if the Turks arrested on the *Manowba* are not immediately released.

Premier Canalejas, of Spain, and his cabinet settle their differences and decide to continue in office.

24.—Argentina sends an ultimatum to Paraguay demanding compensation for attacks on shipping and other property.

25.—General Pedro Montero proclaimed President of Ecuador by the army, Dec. 29, 1911, is killed by a mob at Guayaquil.

Argentina breaks off diplomatic relations with Paraguay.

Final ballots for the German Reichstag give the Socialists a total of 110 seats, including the "Kaiser Division" of Potsdam.

Premier Vasconcellos, of Portugal, and his cabinet resign.

26.—France and Italy reach a settlement of the dispute over the seizure of

XXXV. CHRONOLOGY AND NECROLOGY

two French vessels by Italian war-ships.

A third French vessel, the *Tavignano*, is seized by the Italians off the coast of Tripoli.

27.—Italy releases the two French vessels and refers to the Hague all questions arising out of their capture.

A settlement of the Chinese revolution is demanded by 46 generals of the Imperial army.

28.—A mob at Quito, Ecuador, kills in prison five surrendered revolutionary generals.

The Chinese revolutionists defeat a large body of Imperial troops near Ku-Cheng, Ngan-Hwei Province.

29.—A bill prohibiting the admission of Jewish citizens of the United States and placing special duties on American imports is introduced in the Russian Duma.

The armistice between the Chinese rebels and the Imperial forces expires.

A general strike is inaugurated in Lisbon, Portugal.

30.—In Lisbon constitutional guarantees are suspended and martial law is declared.

31.—Juarez, Mexico, is seized by opponents of the Madero government.

FEBRUARY

1.—Revolutionists proclaim Emilio Vasquez Gomez president of Mexico.

2.—General Manuel Bonilla assumes the Presidency of Honduras.

3.—The Manchurian assembly notifies Yuan Shih-kai that it desires no part in a Chinese republic.

4.—The Dowager Empress of China issues an edict to Yuan Shih-kai instructing him to establish a republic in coöperation with the Republicans at Nanking.

5.—Eladio Victoria, provisional president of the Dominican Republic, is elected president.

King George and Queen Mary reach London after nearly three months' absence in India.

The Italian fleet bombards Hodeida on the Red Sea.

6.—The Chinese National Assembly at Nanking accepts Yuan Shih-Kai's terms for the abdication of the monarchy, and grant the imperial family an annual pension of \$2,400,000.

7.—The German Emperor opens the new Reichstag.

10.—The Franco-German agreement on Morocco and the Congo is ratified by the French Senate.

12.—Pu Yi, Emperor of China, issues an edict of abdication and recognition of the republic.

13.—The detention of twelve American subordinates of W. Morgan Shus-

ter is ordered by the Persian government.

By a vote of 452 to 73 the French Chamber of Deputies decides to hasten by two years the completion of its naval programme.

14.—The British Parliament is opened.

Sun Yat-sen, provisional president, offers the first presidency of the Chinese Republic to Yuan Shih-kai.

15.—The National Assembly elects Yuan Shih-kai President of the Chinese republic.

16.—The Norwegian Cabinet resigns.

18.—Paraguay satisfies the demands of Argentina for compensation for attacks on Argentine shipping, and diplomatic relations between the two countries are resumed.

19.—Gen. J. K. M. Bratlie forms a new ministry in Norway.

20.—The National Assembly elects Li Yuen-hung, commander of the revolutionary army, Vice-President of the Chinese Republic.

22.—Señor Ospina, Colombian minister to the United States, is recalled.

23.—General Orozco, military governor of Chihuahua, Mexico, joins the revolutionary movement and gives the revolutionists control of the state.

The Italian Chamber of Deputies passes a bill annexing Tripoli and Cyrenaica.

Persia accepts an offer of a \$1,000,000 7 per cent. loan from England and Russia.

24.—The Italian Senate ratifies the decree annexing Tripoli and Cyrenaica. An Italian squadron sinks several Turkish war vessels at Beirut, Syria, and causes considerable damage to life and property in the city.

27.—Juarez, Mexico, is captured by the revolutionists.

Yuan Shih-kai accepts the presidency of the Chinese republic.

28.—Eladio Victoria is inaugurated president of the Dominican Republic.

29.—A mutiny of 2,000 revolutionary troops in Pekin leads to much pillaging and burning of property.

MARCH

1.—Pedro Pena is appointed provisional president of Paraguay, succeeding Liberato Rojas, captured by revolutionists.

A strike of coal miners involving one million men begins in the United Kingdom.

2.—The meeting of the Chinese revolutionary troops spreads to Tien-tsin.

3.—Federal troops drive General Orozco and his rebel forces out of Chihuahua, Mexico.

4.—Dubab, Arabia, is bombarded by an Italian cruiser.

Foreign troops arrive in Peking and the mutiny of the revolutionary soldiers is suppressed.

6.—General Julio Andrade, largely responsible for the suppression of the revolution in Ecuador, is assassinated by his troops.

The first use of dirigible balloons in actual war is made by the Italian army at Zanur, Tripoli.

7.—The Chinese National Assembly at Nanking agrees to the inauguration of Yuan Shih-kai at Peking.

A loan of \$700,000 is made to the provisional government of China by a syndicate representing the United States, Great Britain, Germany and France.

Count Khuen-Hedervary, Premier of Hungary, and his cabinet resign.

Road Amundsen, at Hobart, Tasmania, announces his discovery of the South Pole, Dec. 14, 1911.

8.—The Cuban House of Representatives refuses to recognize the decree of President Gomez adjourning Congress.

10.—Yuan Shih-kai is inaugurated first president of the Chinese Republic at Peking.

11.—Yuan Shih-kai proclaims a general amnesty.

The Spanish cabinet is reorganized.

12.—Russia offers to raise one-sixth of a proposed loan to China.

The Mawson Antarctic expedition returns to Hobart, Tasmania.

14.—In Rome, Italy, a young anarchist named Antonio Dalba fires several shots at King Victor Emmanuel.

18.—Winston Churchill, introducing the naval estimates in the British House of Commons, pledges Great Britain to a reduction of naval construction if Germany will make similar concessions.

19.—The Minimum Wage bill, designed to end the coal strike, is introduced in the British House of Commons.

20.—The Chinese National Assembly grants the suffrage to women property owners who are able to read and write.

21.—A group of bankers representing six powers, demand a definition of China's financial policy from Yuan Shih-kai as a preliminary to the financing of a loan.

22.—Asuncion, capital of Paraguay, is captured by revolutionists; President Peña and his cabinet are forced to seek refuge on foreign warships.

Russia withdraws from the six power group of bankers which proposes a loan to China of \$300,000,000.

Thomas MacKenzie succeeds Sir Joseph Ward as premier of New Zealand.

24.—The coal strikes in Germany and France come to an end.

25.—Dr. Emilio Gonzales Navero is

appointed provisional president of Paraguay.

The United States, Great Britain, Germany and France protest against a large Belgian loan to China arranged by Premier Tang Shao-yl.

The Japanese Diet is dissolved.

27.—The Minimum Wage bill is passed by the British House of Commons.

28.—The Minimum Wage bill passes the British House of Lords.

29.—Tang Shao-yl, premier of China, completes and announces his cabinet.

31.—General Leonidas Plaza is elected President of Ecuador.

The conclusion of a treaty granting France a protectorate over Morocco is announced at Paris.

Capt. R. F. Scott's vessel returns to New Zealand and reports that his expedition had reached a point 150 miles from the South Pole and would spend another winter in the Antarctic.

APRIL

6.—The British coal strike is ended by vote of the Miners' Federation of Great Britain.

9.—More than 100,000 persons take part in an anti-home rule demonstration at Belfast, Ireland.

10.—The White Star liner *Titanic* sails from Southampton on her maiden voyage to New York.

11.—A bill providing for home rule for Ireland is introduced in the British House of Commons.

15.—The White Star liner *Titanic* sinks off the Newfoundland coast, 1,150 miles east of New York, four hours after striking an iceberg late the previous night.

16.—The Home Rule bill passes its first reading in the British House of Commons.

Ambassadors of the European powers at Constantinople inquire of the Turkish Government on what terms it will conclude peace with Italy.

17.—Mexico refuses to recognize the right of the United States to interfere in Mexican affairs.

The Mexican revolutionists capture the towns of Cullacan and Sierra Mojada.

18.—Two Turkish forts at the entrance to the Dardanelles are bombarded by an Italian squadron; Turkey notifies the neutral powers of the closure of the Dardanelles.

19.—Russia agrees to recognize Italy's sovereignty in Tripoli in return for support in the Balkans.

A mutiny of Moorish soldiers in Fez is suppressed after the murder of over 50 French soldiers and nearly 100 Jews.

21.—George Lukacs forms a new ministry in Hungary.

23.—The Irish National Convention, in session at Dublin, unanimously indorses the Home Rule bill.

Italian warships seize the Turkish island of Stampalia, near the entrance to the Dardanelles.

Turkey replies to the note of the powers that economic concessions will be made to Italy, but Turkish sovereignty in Tripoli must be maintained.

25.—The Welsh Disestablishment bill passes the British House of Commons on its first reading.

27.—China cancels the contract for a loan of \$50,000,000 from a Belgian syndicate, on the protest of the United States, Great Britain, France and Germany.

29.—Yuan Shih-kai, President of China, delivers his first message to the Advisory Council.

30.—The Venezuelan cabinet resigns.

The cable steamer *Mackay-Bennett* arrives at Halifax with the bodies of 190 victims of the *Titanic* disaster, having buried 116 bodies at sea.

MAY

1.—Turkey decides to reopen the Dardanelles.

2.—A British commission headed by Lord Mersey begins an inquiry into the causes of the *Titanic* disaster.

3.—Fifty-nine unidentified bodies of victims of the *Titanic* disaster are buried at Halifax.

4.—Emilio Vasquez Gomez is proclaimed provisional president of Mexico; he appoints General Orozco his minister of war.

Italian troops occupy the island of Rhodes.

P. May is appointed minister to the United States from Belgium.

6.—The activity of Ambassador James Bryce in promoting the Reciprocity Treaty between the United States and Canada is attacked in the British House of Commons.

The cable steamer *Minia* arrives at Halifax with the bodies of 15 victims of the *Titanic* disaster.

9.—The Home Rule bill passes its second reading in the British House of Commons.

Count Paul Wolff Metternich resigns as German ambassador to Great Britain.

10.—The German Reichstag passes on second reading a bill increasing the army by 40,000 men.

13.—Government troops severely defeat the revolutionists near Asuncion, Paraguay.

14.—The German Reichstag passes on second reading a bill providing for large increases in the navy.

The Chinese Legislative Council rejects a loan agreement proposed by the six powers which stipulates foreign supervision of expenditures.

15.—Frederick VIII, King of Denmark, dies suddenly at Hamburg, Germany; his son, Christian X, is proclaimed as his successor.

16.—The Welsh Disestablishment bill passes its second reading in the British House of Commons.

The conference of the six-power group of bankers at London is suspended because of Russia's demand for special safeguards.

Italy seizes the island of Lipso, near Smyrna.

17.—The Turkish garrison at Rhodes surrenders to the Italians after an eight-hour battle.

18.—The Japanese elections result in the return of the Seiyukai government.

20.—Italian troops occupy the island of Syml near Rhodes.

21.—A new coalition ministry is formed in Chile.

The German Reichstag passes on final reading the bills increasing the army and navy.

23.—Government troops decisively defeat the Mexican insurgents near Relano.

Tang Shao-yi, Premier of China, resigns; the budget shows a deficit of \$200,000,000.

A general strike, accompanied by serious rioting, begins at Budapest, Hungary, as a protest against the election of Count Tisza as president of the Lower House.

24.—A negro uprising of serious proportions is reported from Cuba.

The funeral of Frederick VIII, late King of Denmark, is held at Copenhagen.

A strike of transport workers, involving 100,000 men, begins in London.

26.—The French garrison at Fez, Morocco, is attacked by a large force of tribesmen.

30.—Several clashes occur between the Cuban insurgents and the Government troops.

JUNE

2.—President Gomez, of Cuba, requests the Cuban Congress to suspend constitutional guarantees.

The general election in Belgium results in the return of an increased Clerical majority.

4.—Sixty members of the Hungarian Chamber of Deputies are ejected for violence in obstructing legislation.

5.—Premier Vasconcellos, of Portugal, and his cabinet resign.

Count Tisza, President of the Hun-

garian Chamber of Deputies, suspends the sittings of the Diet.

7.—The legislature of the State of Chihuahua, Mexico, authorizes a \$1,000,000 bond issue, guaranteed by the state and General Orozco, for the financing of the revolution.

An Opposition member of the Hungarian Chamber of Deputies attempts to assassinate Count Tisza, President of the Chamber.

8.—During maneuvers off Cherbourg the French battleship *St. Louis* rams the submarine *Vendemiaire*; its crew of 23 are drowned.

10.—Colonel John E. B. Seely is appointed Secretary of State for War in the British cabinet, succeeding Viscount Haldane, who is appointed Lord Chancellor.

A national strike of transport workers is declared in London.

12.—Italian troops in Tripoli repulse an attack by a strong force of Turks and Arabs at Homs.

20.—An agreement is reached by the representatives of the six participating powers on the terms of a \$300,000,000 loan to China.

25.—General Orozco, the Mexican revolutionary leader, offers to surrender if guaranteed amnesty for himself and his followers.

It is announced that China has rejected the terms of the loan agreed upon by the six-power group.

27.—General Evaristo Estenoz, the Cuban rebel leader, is killed in an engagement near Santiago.

The Belgian triennial prize for dramatic literature is for the third time awarded to Maurice Maeterlinck.

28.—Italian troops in Tripoli defeat, with considerable loss, a force of Turks and Arabs at Sidi Said.

29.—Tang Shao-yi, Premier of China, resigns.

30.—Lu Cheng-hsiang, Minister of Foreign Affairs in the Tang Shao-yi cabinet, is appointed Premier of China.

A cyclone causes large property damage and loss of life at Regina, Saskatchewan.

JULY

3.—The Mexican revolutionists are severely defeated south of Chihuahua, losing 4,600 in killed and wounded.

The British Board of Trade completes its inquiry into the *Titanic* disaster.

4.—The German Emperor and the Czar of Russia meet at Baltic Port, Russia.

5.—Mexican federal troops take possession of the city of Chihuahua, evacuated by the rebels.

6.—The Norwegian Storthing appropriates \$5,000,000 for naval purposes.

The Portuguese government sends a warship to Oporto to suppress a threatened Royalist insurrection.

8.—The trial of the Camorrista, begun in March, 1911, ends at Viterbo, Italy; all are convicted of criminal conspiracy and five of murder. The maximum sentence is 30 years solitary confinement.

9.—The Portuguese army reserves are called out to suppress the Royalist uprising.

10.—The French Chamber of Deputies passes an electoral reform bill based on proportionate representation.

Shevket Pasha, Turkish Minister of War, resigns.

11.—The Portuguese Royalist rebels are severely defeated and retire over the Spanish border.

14.—Dr. Bellisario Porras is elected President of Panama.

Hsiung Hsi-ling, Minister of Finance, and four other members of the Chinese cabinet resign.

15.—The British National Insurance Act goes into operation; 30,000 dockers strike at Liverpool, refusing to comply with its provisions.

17.—The Turkish cabinet resigns in consequence of a revolt in the army against the methods of the Committee of Union and Progress.

18.—The Cuban insurrection is completely suppressed and a part of the force of United States marines is withdrawn.

19.—The Chinese National Assembly rejects all Yuan Shih-kai's nominees for cabinet portfolios.

Two Italian torpedo boats are sunk and several damaged in an attack on the Turkish forts at the entrance of the Dardanelles; the Turkish cabinet decide again to close the strait.

21.—Albanian revolutionists capture the town of Pristina.

Moukhtar Pasha is appointed Grand Vizier of Turkey and forms a cabinet.

22.—The British supplementary naval estimates call for the construction of 21 battleships in five years to meet German competition.

26.—At the instance of the Chinese military commanders, the National Assembly confirms Yuan Shih-kai's nominations to the cabinet.

27.—The leaders of the striking dockers in London surrender unconditionally and recommend the men to return to work.

28.—Thirty thousand striking dockers in London reject the recommendation of their leaders and decide to continue the strike.

29.—General Luis Mena, Nicaraguan Minister of War, refuses to resign at the request of President Diaz and is removed from his office by force.

Spain refuses to expel the Portuguese Royalist refugees.

30.—Mutsuhito, Emperor of Japan, dies at Tokio, and is succeeded by his son Yoshihito.

The British Board of Trade makes public the findings of its inquiry into the *Titanic* disaster.

The new Turkish ministry announce their willingness to enter into peace negotiations with Italy, and are rewarded by a vote of confidence in the Chamber of Deputies.

AUGUST

1.—The Peruvian cabinet resigns.

Dr. George Ernest Morrison, Peking correspondent of the *London Times*, is appointed political adviser to the President of China.

2.—At Kotschana, Turkey, several score Bulgarians are massacred by Mahometans.

4.—The American gunboat *Annapolis* lands a small force of marines near Managua, Nicaragua, for the protection of the lives and property of American citizens.

5.—The Turkish Chamber is dissolved after passing a vote of want of confidence in the Cabinet.

6.—Italian military and naval forces occupy Zuara, Tripoli, after a severe engagement.

7.—The United States cruiser *Tacoma* arrives at Bluefields, Nicaragua.

The British House of Commons adjourns.

8.—The National Palace at Port-au-Prince, Haiti, is destroyed by a powder explosion in which Gen. Cincinnatus Leconte, President of Haiti, is killed.

The Haitian National Assembly chooses as President Tancrede Auguste.

9.—The Chilean cabinet resigns.

Mulai Hafid, Sultan of Morocco, abdicates in favor of his brother, Mulai Youssef.

10.—Montenegro appeals to the Powers to intervene in the boundary dispute with Turkey.

11.—The Nicaraguan rebel forces under General Mena bombard Managua.

14.—American soldiers in the legation at Managua, Nicaragua, assist in the defense of the town against a rebel force.

16.—It is announced at St. Petersburg, on the departure of M. Poincaré, that the Franco-Russian *entente* has been reaffirmed.

A number of revolutionary leaders are arrested at Peking; two are executed at the direction of Yuan Shih-kai.

Turks massacre a number of Albanian Christians near the Montenegrin frontier.

17.—Guillermo Billinghurst, mayor of Lima, is elected President of Peru.

The Nicaraguan rebels capture Leon with the slaughter of 400 Government troops.

20.—Juarez, Mexico, is reoccupied by Government troops.

21.—Bramwell Booth becomes head of the Salvation Army.

22.—The French Government orders the dissolution of all unions of school teachers.

25.—The Turkish Government orders a court martial of all persons implicated in the Kotschana massacre.

Turkish inhabitants of Slenitz, Serbia, massacre a number of native Christians.

27.—Turkey declines to consider suggestions of the Powers for reforms in the administration of Albania.

29.—Great Britain protests to China against the proposed incorporation of Tibet as a province of the Republic.

30.—Great Britain demands that China abandon an expedition to Tibet for the restoration of the authority of China.

31.—Nicaraguan troops win a decisive victory over the revolutionists.

SEPTEMBER

7.—Turkey and Bulgaria begin preparations for war.

It is announced that Turkey and Italy have agreed to exchange non-combatant prisoners.

9.—The Servian cabinet resigns.

11.—The Chinese Government authorizes the construction of a comprehensive system of railways.

12.—The Russian Duma is dissolved.

13.—The funeral services of Mutsuhito, late Emperor of Japan, are held at Tokio and the body is conveyed to Aoyama in solemn procession; Count Nogri and his wife commit suicide.

14.—The body of Mutsuhito, late Emperor of Japan, is placed in the imperial mausoleum at Monoyama, near Kioto.

16.—The Turkish Government suspends martial law in Constantinople, and extends Albanian concessions to other portions of the empire.

17.—The United States informs Nicaragua that it will lend strong moral support to the preservation of good government.

The Hungarian Parliament opens.

The Parliament of the Netherlands opens.

A Turkish force is defeated with great loss near Derna, Tripoli.

18.—Serious socialist riots occur in the streets of Budapest.

20.—American forces in Nicaragua relieve the city of Granada from danger of famine.

21.—The Chinese Government refuses the terms of the six-power group for a \$350,000,000 loan.

23.—The worst typhoon in many years in Japan causes much damage to property.

24.—Guillermo Billinghurst is inaugurated President of Peru.

Two thousand Chinese soldiers mutiny at Wu-Chang.

25.—General Mena, the Nicaraguan revolutionist, surrenders to the U. S. forces.

President Madero of Mexico offers amnesty to the rebels.

27.—A large demonstration against home rule is held in Belfast, Ireland.

28.—A covenant of resistance to home rule for Ireland is largely signed in Belfast and throughout the United Kingdom.

30.—Greece, Bulgaria, and Servia order the mobilization of their armies.

OCTOBER

1.—Belisario Porras is inaugurated President of Panama.

Turkey decides to mobilize the whole of her regular army and first reserves.

3.—Spanish railway employees present to Premier Canalejas a demand for minimum wage.

Spain begins the mobilization of a large army to deal with the railway strike.

Hostilities are begun between Bulgarian and Turkish forces on the Bulgarian frontier.

4.—American marines capture insurgent position near Masaya, Nicaragua, with a loss of four dead and five wounded; Government troops afterward clear the town of rebels.

France appeals to the Powers to restrain the Balkan States and to force Turkey to grant reforms in her European provinces.

5.—Minor engagements between Turkish troops and Montenegrin and Bulgarian forces occur on Turkish soil.

6.—The town of Leon, Nicaragua, surrenders to the American forces.

It is announced at Paris that Great Britain, Germany, Russia, and Austria-Hungary have accepted the proposals of France for intervention to prevent a Balkan war.

7.—The British Parliament reassembles.

It is announced that Great Britain, Russia and Austria accept the French proposal that they act as mandatories of the Powers to prevent war in the Balkans.

8.—Bulgaria declines the Powers' offer of intervention.

Montenegro declares war on Turkey.

9.—It is reported that peace has been restored in Nicaragua.

A severe engagement occurs between Montenegrin and Turkish forces near Podgoritza.

10.—After 32 hours' fighting the Turkish commander on Detchitch Mountain, near Podgoritza, surrenders with a majority of his troops.

12.—It is reported from Vera Cruz, Mexico, that General Felix Diaz, nephew of Porfirio Diaz, has joined the rebellion against President Madero.

Italy grants Turkey three days to consider her terms of peace.

Montenegrin troops defeat a Turkish army near Scutari and invest Tarabosch.

14.—It is announced in Berlin that the German Government has decided to create a state monopoly of petroleum as a means of expelling the Standard Oil Company.

Turkey declines to allow the intervention of the Powers to secure reforms in Macedonia.

Bulgaria, acting for the Balkan states, presents a note to Turkey demanding the reforms indicated in the Treaty of Berlin.

A Turkish force invades Servia; Tushi is captured by the Montenegrins; Greece admits the Cretan deputies to Parliament and demands the release of Greek vessels confiscated by Turkey.

15.—A protocol of peace preliminaries is signed at Ouchy, Switzerland, by Turkish and Italian delegates.

Turkey withdraws her diplomatic representatives from Greece, Servia, and Bulgaria.

16.—General Felix Diaz, with a rebel force of 500 men, enters the city of Vera Cruz and seizes the arsenal and garrison.

Montenegrin troops capture Berana after ten days' fighting.

Prince Charles Max Lichnowsky is nominated ambassador to Great Britain from Germany.

17.—The Mexican Chamber of Deputies defeat a resolution demanding the resignation of the cabinet, and at the same sitting pass a vote of confidence in the Madero Government.

Turkey declares war against Servia and Bulgaria and hostilities are opened at various points on the frontiers; Greece and Servia declare war against Turkey.

The King of Italy publishes a decree of amnesty to the inhabitants of Tripoli and Cyrenalca, guaranteeing full religious liberty.

18.—The Treaty of Lausanne, concluding peace between Italy and Turkey, is signed at Ouchy, Switzerland.

The armies of Bulgaria, Servia and Greece invade Turkish territory and begin active hostilities.

NOVEMBER

China resumes payment of the Boxer indemnities.

19.—Bulgarian troops capture the town of Mustapha Pasha, near Adrianople.

The Turkish fleet bombards Verna, a Bulgarian port on the Black Sea.

Russia recognizes the independence of northern Manchuria.

21.—The United Shoe Machinery Co. of Canada is declared to be an illegal combination.

22.—F. D. Monk, Canadian Minister of Public Works, resigns.

Greek forces occupy the capital of the island of Lemnos.

A Servian force captures Kotchana.

23.—Mexican troops under General Beltran occupy Vera Cruz and capture General Felix Diaz and his staff.

A Servian army occupies Novi-Bazar, near the Servian border.

24.—Bulgarian troops capture Kirk Killse, taking prisoner 1,200 Turks.

25.—A Bulgarian army begins the siege and bombardment of Adrianople.

A two-day battle at Koumanovo results in a victory for the Servians.

26.—A Servian army captures Uskub, the Turkish garrison withdrawing to Salonika.

27.—General Felix Diaz is sentenced to death by a court martial at Vera Cruz; the execution of the sentence is halted by a civil writ of habeas corpus.

The Bulgarians cut the railway line from Constantinople to Lule-Burgas at Tcherkesskehl, 50 miles from Constantinople.

Bulgarian forces capture Baba-Eskil. Montenegrin forces begin the bombardment of Scutari.

28.—France and Italy conclude an agreement reciprocally recognizing the freedom of action of France in Morocco and of Italy in Libya.

The Czar of Russia telegraphs King Peter of Serbia his congratulations of the success of the Servian armies in Macedonia.

29.—A new cabinet is formed in Ecuador.

Ghazi Moukhtar Pasha resigns as Grand Vizier of Turkey and is succeeded by Kiamil Pasha.

Servian forces occupy Veles.

30.—The Bulgarian army defeats the Turks in a two-day battle near Lule-Burgas and capture the town.

Opposition deputies of the Hungarian Parliament are prevented from entering the chamber by a military force.

31.—British and French warships are ordered to Turkish waters for the protection of Christians against possible attacks.

The Bulgarian army at Lule-Burgas completely routs the main Turkish army.

1.—General elections in Cuba result in the election of Gen. Mario Menocal as President and the return of a Conservative government.

2.—Elections in Nicaragua result in the return of the Conservatives, and the election of Adolfo Diaz as president.

3.—Turkey applies to the Powers for mediation for the cessation of hostilities and the establishment of peace.

Greek forces capture Preveza.

4.—France declines to take the initiative in intervening to impose an armistice on the Balkan States.

5.—Turkey appeals to the Powers through France for collective mediation for the cessation of hostilities.

6.—The Turks are severely defeated in a two-day battle between Sarai and Tchorlu.

8.—Salonika is occupied by Greek troops under Crown Prince Constantine; the Turks massacre large numbers of Christians.

The Sheikh-ul-Islam summons the Ulemas to organize a holy war.

10.—The Turkish Government orders a general disarmament of the inhabitants of Constantinople.

11.—The Government is defeated in a vote on an amendment to the Home Rule bill in the British House of Commons, but does not resign.

12.—Jose Canalejas y Mendes, premier of Spain, is shot and killed by an anarchist in the streets of Madrid.

The Nobel prize for physics is conferred upon Gustaf Dalen, head of the Stockholm Gas Company; the prize for chemistry is divided between Prof. Grignard of Nancy and Prof. Paul Sabatier of Toulouse.

13.—It is announced that Archbishop Nouel of Santo Domingo is to become provisional President of the Dominican Republic, the revolutionists agreeing to this plan suggested by the American commissioners.

Turkey opens peace negotiations with the Balkan allies and a cessation of hostilities is arranged.

A resolution to rescind the vote on the amendment to the Home Rule bill on which the Government was defeated leads to riotous scenes in the British House of Commons.

14.—Count Alvarado de Romanones, president of the Chamber of Deputies, is appointed premier of Spain; he retains all the members of the Canalejas ministry.

15.—Lu Cheng-hsiang is appointed Chinese Minister of Foreign Affairs.

The Nobel prize for literature is awarded to Gerhart Hauptmann, German poet, novelist, and dramatist.

18.—Servian troops capture Monastir.

19.—Greece, Servia, and Bulgaria make a joint reply to Turkey's request for an armistice.

20.—China opens negotiations with Russia on the subject of Mongolia.

A hurricane in progress since the 15th causes large loss of life and property in Jamaica.

21.—France notifies Turkey that she will hold Turkey responsible for any violence against Christians.

Turkey rejects the Bulgarian conditions for an armistice and fighting is resumed at the Tchatalja lines.

23.—Manuel Calero resigns as Ambassador to the United States from Mexico.

24.—Negotiations for an armistice are resumed between Turkish and Bulgarian delegates at Tchatalja.

28.—Eladio Victoria, president of the Dominican Republic, resigns.

The fourth Russian Duma assembles. Servian troops occupy Durazzo, Albania.

Militant suffragists in London destroy mail matter in post boxes.

30.—Arrangements are concluded for an armistice between Turkey and the Balkan Allies.

31.—A Greek torpedo boat attacks and sinks a Turkish battleship in Salonika harbor.

DECEMBER

2.—Germany warns Russia that she will support Austria should hostilities arise out of the Austro-Servian difficulties.

3.—An armistice agreement is signed between Turkey and Bulgaria, Servia and Montenegro; Greece refuses to consent to the conditions.

4.—The Italian Chamber of Deputies approves the treaty of peace with Turkey.

It is announced that peace negotiations between Turkey and Bulgaria, Servia, and Montenegro will begin in London, Dec. 13.

Premier Saionji, of Japan, and his ministry, resign.

The Catholic Centre party in the German Reichstag declares a lack of confidence in the Chancellor, von Bethmann-Hollweg.

The German Chancellor issues an order forbidding members of the German diplomatic corps to marry women of foreign nations.

5.—Premier Borden, of Canada, announces that Parliament will be asked to vote \$35,000,000 for the construction of three warships as Canada's contribution to the British Navy.

It is announced at Washington that General Mena, of Nicaragua, is to be

released from detention at Panama by the United States.

7.—Germany acquiesces in the proposal of Great Britain for a conference of ambassadors of the great powers on the Balkan situation.

8.—It is officially announced that the Triple Alliance has been renewed without alteration.

9.—It is announced that Austria has contracted a \$25,000,000 loan in New York.

It is announced that no award of the Nobel prize for peace will be made.

12.—The British House of Commons completes the committee stage of the Home Rule bill.

14.—Gen. Louis Botha, Premier of South Africa, resigns.

16.—Peace conferences between representatives of Turkey and the Balkan allies begin in London.

17.—The peace conference in London is halted to allow the Turkish delegates to secure authority to treat with delegates from Greece.

The first meeting of the ambassadors of the great Powers to consider the Balkan question is held in London.

A naval battle between Greek and Turkish vessels occurs outside the Dardanelles.

The Emperor of Japan, by rescript, orders Prince Taro Katsura to form a cabinet.

18.—Mexican rebels under General Orozco capture Casas Grandes.

Turkey instructs her delegates in London to admit Greek delegates to the peace conference.

It is announced that Austria and Servia have reached an agreement on the Albanian question.

20.—The Great Powers agree on the principle of autonomy for Albania with a provision guaranteeing Servia commercial access to the Adriatic.

A memorial service for the late Whitelaw Reid is held in Westminster Abbey, London.

23.—The Balkan allies present in the peace conference a statement of their demands.

An attempt is made at Delhi on the life of Viscount Hardinge, Governor-General of India.

Prince Ludwig, Regent of Bavaria, halts a movement for the dethronement of his uncle, King Otto.

25.—Dr. Elias Malpartida, Premier of Peru, resigns.

26.—Suffragettes in England interfere with signal wires on the Great Northern Railway.

Raymond Poincaré consents to become a candidate for the Presidency of France.

28.—Turkey offers counter proposals in the peace conference at London.

AMERICAN NECROLOGY

- ALGER, Philip R., Washington, Feb. 23, aged 52; Captain, U. S. N., Professor of Mathematics, U. S. Naval Academy.
- ANDERSON, Carl C., Fostoria, O., Oct. 1, aged 34; representative in Congress from Ohio.
- ASTOR, John Jacob, drowned at sea, April 15, aged 47; capitalist.
- AYCOCK, Charles Brantley, Goldsboro, N. C., April 4, aged 53; Governor of North Carolina, 1901-5.
- AYME, Louis Henri, Lisbon, Portugal, May 16, aged 57; U. S. consul-general at Lisbon.
- BARTON, Clara, Glen Echo, Md., April 12, aged 90; founder of the American Red Cross Society.
- BINGHAM, Henry Harrison, Washington, March 23, aged 70; representative in Congress from Pennsylvania.
- BOAS, Emil Leopold, New York, May 3, aged 58; General Manager, the Hamburg-American Line.
- BONBRIGHT, Daniel, Daytona, Fla., Nov. 27, aged 81; professor of Latin in Northwestern University.
- BORDEN, Matthew Chaloner Durfee, Oceanic, N. J., May 27, aged 70; cotton manufacturer.
- BOSS, Lewis, Albany, Oct. 5, aged 66; professor of astronomy in Union College and director of Dudley Observatory.
- BOWYER, John M., Tampa, Fla., March 13, aged 59; Rear-Admiral, U. S. N., retired; former Superintendent of the U. S. Naval Academy.
- BRASTOW, Lewis Ormsmond, New Haven, Conn., Aug. 10, aged 78; former dean of the Yale Divinity School.
- BROWN, Justus Morris, Hackensack, N. J., Dec. 21, aged 72; Brigadier-General, U. S. A., retired.
- BRUSH, George Jarvis, New Haven, Conn., Feb. 6, aged 80; mineralogist, Professor Emeritus in Sheffield Scientific School of Yale University.
- BURNHAM, Daniel Hudson, Heidelberg, Germany, June 1, aged 65; architect.
- BUTT, Archibald Willingham, drowned at sea, April 15, aged 45; Major, U. S. A., personal aide to President Taft.
- CALIFE, Joseph Mark, Towanda, Pa., Jan. 4, aged 68; Brigadier-General, U. S. A., retired.
- CAREY, Asa Bacon, Vineyard Haven, Mass., April 4, aged 77; Brigadier-General, U. S. A., retired.
- CARLETON, Will, Brooklyn, Dec. 18, aged 77; poet.
- CARRINGTON, Henry Beebe, Hyde Park, Mass., Oct. 26, aged 82; Brigadier-General, U. S. A., retired, author of historical works.
- CASSON, Henry, Washington, Sept. 23, aged 69; sergeant-at-arms of the House of Representatives.
- CLARKE, William Newton, De Land, Fla.; professor of theology in Colgate University.
- CLEAVES, Henry Bradstreet, Portland, Me., June 22, aged 72; governor of Maine, 1893-7.
- COLLYER, Rev. Robert, New York, Nov. 30, aged 83; pastor emeritus of the Unitarian Church of the Messiah, New York.
- CONNELL, Richard E., Poughkeepsie, N. Y., Oct. 30, aged 55; representative in Congress from New York.
- COOPER, Philip Henry, Morristown, N. J., Dec. 29, aged 68; Rear-Admiral, U. S. N., retired.
- CRAMP, Samuel H., Philadelphia, Nov. 3, aged 79; shipbuilder.
- CROTHERS, Austin Lane, Elkton, Md., May 24, aged 52; governor of Maryland, 1908-12.
- CRUM, William Demos, Charleston, S. C., Dec. 7, aged 53; U. S. Minister to Liberia.
- CUTTING, William Bayard, New York, March 1, aged 62; lawyer and civic reformer.
- DAVENPORT, Homer Calvin, New York, May 2, aged 44; cartoonist.
- DAWSON, Thomas Cleveland, Washington, May 1, aged 47; resident diplomatic officer of the State Department.
- DEAN, William Lofthouse, Boston, March 14, aged 58; marine painter.
- DECKER, Sarah Platt, San Francisco, July 7; former president of the General Federation of Women's Clubs.
- DESPRADALLE, Constant Desire, Boston, Sept. 2, aged 50; architect, director of the Department of Architecture in the Massachusetts Institute of Technology.
- DICKENS, Alfred Tennyson, New York, Jan. 2, aged 66; lecturer.
- DUFFIELD, Henry Martyn, Detroit, July 13, aged 70; lawyer, Brigadier-General of volunteers, veteran of the Civil and Spanish Wars.
- DUNBAR, Ralph Oregon, Olympia, Wash., Sept. 19, aged 67; Chief Justice, Supreme Court of Washington.
- DUNCAN, Joseph Wilson, San Antonio, Tex., May 14, aged 58; Brigadier-General, U. S. A., Commanding the Department of Texas.
- DYER, Charles Gifford, Chicago, Feb. 1, aged 66; artist.
- EATON, Daniel Cady, New Haven, May 11, aged 74; professor emeritus of history and criticism of art, Yale University.
- EVANS, Robley Dunglison, Washington, Jan. 3, aged 64; Rear-Admiral, U. S. N., retired.
- EVERETT, William Henry, Newport,

XXXV. CHRONOLOGY AND NECROLOGY

R. I., June 10, aged 64; Rear-Admiral, U. S. N., retired.

EWERS, Ezra Philetus, Owenton, Ky., Jan. 16, aged 74; Brigadier-General, U. S. A., retired.

FARLEY, Joseph Pearson, April 6, aged 73; Brigadier-General, U. S. A., retired.

FINCH, William Albert, Ithaca, N. Y., March 31, aged 57; professor of law in Cornell University.

FREER, Paul Caspar, Manila, P. I., April 17, aged 50; professor of chemistry, and dean of the College of Medicine and Surgery in the University of the Philippines.

FUNK, Isaac Kauffman, Montclair, N. J., April 4, aged 72; author, editor, and publisher.

FURNESS, Horace Howard, Wallingford, Pa., Aug. 13, aged 79; Shakespearean scholar.

FUTRELL, Jacques, drowned at sea, April 15, aged 37; novelist.

GATES, George Augustus, Winterhaven, Fla., Nov. 20, aged 60; president of Fisk University.

GOODWIN, William Watson, Cambridge, Mass., June 15, aged 81; professor emeritus of Greek Literature in Harvard University.

GRAPTON, Charles Chapman, Fond du Lac, Wis., Aug. 30, aged 82; Protestant Episcopal Bishop of Fond du Lac.

GRANT, Frederick Dent, New York, April 12, aged 62; Major-General, U. S. A., commanding the Eastern Division.

GREENOUGH, George Gordon, Charleston, S. C., June 27, aged 67; Brigadier-General, U. S. A., retired.

GRISCOM, Clement Acton, Haverford, Pa., Nov. 10, aged 72; financier.

HANSCOM, John Forsyth, Philadelphia, Sept. 30, aged 70; Rear-Admiral, U. S. N., retired.

HARAHAN, James Theodore, Decatur, Ill., Jan. 22, aged 68; former President of the Illinois Central Railroad.

HARRIS, Henry Burkhardt, drowned at sea, April 15, aged 45; theatrical manager.

HARTWELL, Alfred Stedman, Honolulu, Hawaii, Oct. 29, aged 76; Chief Justice of the Supreme Court of Hawaii, 1907-11.

HATHAWAY, Forrest Henry, Portland, Ore., July 29, aged 67; Brigadier-General, U. S. A., retired.

HAWLEY, Edwin, New York, Feb. 1, aged 63; financier and railroad magnate.

HAYES, Edward Mortimer, Morgantown, N. C., Aug. 15, aged 71; Brigadier-General, U. S. A., retired.

HEILNER, Lewis Cass, Brooklyn, Jan. 25, aged 62; Rear-Admiral, U. S. N., retired.

HEILPRIN, Louis, Brooklyn, Feb. 12,

aged 61; author and editor of works of reference.

HEYBURN, Weldon Brinton, Washington, Oct. 17, aged 60; U. S. senator from Idaho since 1902.

HILL, Frank Davis, Frankfort-on-Maine, Germany, May 23, aged 50; U. S. consul-general at Frankfort-on-Maine.

HILL, John Fremont, Augusta, Me., March 16, aged 56; governor of Maine, 1900-4.

HOBBS, Perry L., Cleveland, O., April 6, aged 51; professor of Chemistry in Western Reserve University.

HOWARD, Walter Eugene, Middlebury, Vt., April 12, aged 63; dean of Middlebury College.

HUBBARD, Elbert Hamilton, Washington, D. C., June 4, aged 63; Representative in Congress from Iowa.

HUME, Thomas, Chapel Hill, N. C., July 15, aged 76; author and educator, former professor of English, University of North Carolina.

HUNTINGTON, DeWitt Clinton, University Place, Neb., Feb. 8, aged 82; author, educator, chancellor emeritus of Nebraska Wesleyan University.

JAGGAR, Rt. Rev. Thomas Augustus, Cannes, France, Dec. 13, aged 73; bishop of the American Protestant Episcopal Church in Europe.

KING, Hamilton, Bangkok, Siam, Sept. 1, aged 60; U. S. Minister to Siam.

KNOX, George William, Japan, April 25, aged 59; professor of theology and history of religion in the Union Theological Seminary.

LAMBERTON, Benjamin Pfeffer, Washington, June 9, aged 68; Rear-Admiral, U. S. N., retired.

LARRABEE, William, Clermont, Ia., Nov. 16, aged 80; governor of Iowa, 1886-90.

LEA, Homer, Los Angeles, Nov. 1, aged 35; author, American general of the Chinese revolutionists.

LENZ, Oscar L., New York, June 25, aged 38; sculptor.

LOCHREN, William, Minneapolis, Jan. 28, aged 80; former Commissioner of Pensions and Judge of the United States District Court.

LOEB, Morris, Seabright, N. J., Oct. 8, aged 49; former professor of chemistry in New York University, philanthropist.

LOOS, Charles Louis, Lexington, Ky., Feb. 27, aged 89; professor of Greek, Kentucky University, and president, 1880-97.

LUDDEN, Rt. Rev. Patrick Anthony, Syracuse, N. Y., Aug. 6, aged 76; Roman Catholic Bishop of Syracuse.

LUMLEY, Arthur, Mount Vernon, N. Y., Sept. 27, aged 74; artist and illustrator.

MACARTHUR, Arthur, Milwaukee,

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Sept. 5, aged 67; lieutenant-general, U. S. A., retired.

MACCAMERON, Robert Lee, New York, Dec. 29, aged 46; painter.

MCGEE, W. J., Washington, Sept. 4, aged 59; geologist, anthropologist, Secretary of the International Waterways Commission.

MCHENRY, John Geiser, Benton, Pa., Dec. 27; representative in Congress from Pennsylvania since 1907.

MALBY, George R., New York, July 5, aged 55; representative in Congress from New York.

MALLET, John Williams, Charlottesville, Va., Nov. 6, aged 80; professor emeritus of applied chemistry in the University of Virginia.

MELVILLE, George Wallace, Philadelphia, March 17, aged 72; rear-admiral, U. S. N., retired; former Engineer-in-Chief of the Navy.

MERRIAM, Henry Clay, Portland, Me., Nov. 18, aged 75; major-general, U. S. A., retired.

MICON, Richard Wilde, Oxford, England, June 4, aged 63; professor of fundamental theology and systematic divinity in the Theological Seminary of Fairfield, Va.

MILLET, Francis David, drowned at sea, April 15, aged 65; artist.

MONTGOMERY, Thomas Harrison, Philadelphia, March 19, aged 39; professor of zoology in the University of Pennsylvania.

MORRIS, Charles, Portland, Me., Oct. 27, aged 69; brigadier-general, U. S. A., retired.

NICHOLLS, Francis Tilton, Thibodaux, La., Jan. 5, aged 77; former governor, and Chief Justice of the Supreme Court of Louisiana.

NIXON, George Stuart, Washington, June 5, aged 52; U. S. Senator from Nevada.

NOBLE, John Willock, St. Louis, March 22, aged 80; Secretary of the Interior in President Benjamin Harrison's cabinet.

O'REILLY, Robert Maitland, Washington, Nov. 3, aged 67; major-general, U. S. A., retired, surgeon-general, U. S. A., 1902-9.

PEARSONS, Daniel Kimball, Chicago, April 27, aged 92; philanthropist.

PERRY, Alfred Tyler, Marietta, O., Oct. 18, aged 54; president of Marietta College.

PERRY, David Brainerd, Crete, Neb., May 21, aged 73; president of, and professor of psychology in, Doane College.

PORTER, James Davis, Paris, Tenn., May 19, aged 84; diplomatist, governor of Tennessee, 1874-8.

POTTER, Louis, New York, Aug. 29, aged 38; sculptor.

POWERS, Ridgley Ceylon, Brawley,

Cal., Nov. 11, aged 75; governor of Mississippi, 1871-74.

PRIEST, Henry, Canton, N. Y., Sept. 27, aged 65; dean of the College of Letters and Science, St. Lawrence University.

PRIME, Ebenezer Scudder, Huntington, N. Y., April 27, aged 65; rear-admiral, U. S. N., retired.

RANSDELL, Daniel Moore, Washington, Nov. 28, aged 70; sergeant-at-arms, U. S. Senate.

RAYNER, Isidor, Washington, Nov. 25, aged 62; U. S. senator from Maryland since 1905.

REID, Whitelaw, London, England, Dec. 15, aged 75; U. S. Ambassador to Great Britain.

RICHARDS, Eugene Lamb, Beach Haven, N. J., Aug. 5, aged 74; professor emeritus of mathematics in Yale University.

RICHARDS, William Alford, Melbourne, Australia, July 26, aged 63; governor of Wyoming, 1895-9.

ROBIE, Frederick, Gorham, Me., Feb. 2, aged 89; banker, governor of Maine, 1888-7.

RODENBOUGH, Theophilus Francis, New York, Dec. 19, aged 74; brigadier-general, U. S. A., retired.

ROTCH, Abbott Lawrence, Boston, April 5, aged 51; meteorologist, founder of the Blue Hill Observatory, and professor in Harvard University.

RUSSELL, (Father) John, Detroit, Mich., Nov. 4, aged 90; founder of the Prohibition Party.

SANGER, Charles Robert, Cambridge, Mass., Feb. 25, aged 51; professor of chemistry in Harvard University.

SANGSTER, Margaret Elizabeth, South Orange, N. J., June 3, aged 74; author and editor.

SCHREYVOGEL, Charles, Jan. 27, aged 51; artist.

SCHWAB, Gustav Henry, Litchfield, Conn., Nov. 12, aged 61; merchant shipping agent.

SCRUGGS, William Lindsay, Atlanta, Ga., July 18, aged 70; diplomat.

SEARS, Clinton Brooks, New York, Feb. 16, aged 67; brigadier-general, U. S. A., retired.

SHAW, Robert, Wilmington, Del., July 18, aged 53; etcher.

SHERMAN, James Schoolcraft, Utica, N. Y., Oct. 30, aged 57; Vice-President of the United States.

SMILEY, Albert Keith, Redlands, Cal., Dec. 2, aged 84; peace advocate, founder of the Lake Mohonk Conference.

SMITH, Franklin Guest, Washington, Oct. 7, aged 72; brigadier-general, U. S. A., retired.

SMITH, Gerrit, Darien, Conn., July 21, aged 52; organist and choirmaster.

SMITH, John Bernhardt, New Brunswick, N. J., March 12, aged 53; state

entomologist of New Jersey, professor of entomology in Rutgers College.

SMITH, William, Pelham Manor, N. Y., Jan. 17, aged 80; brigadier-general, U. S. A., retired; paymaster of Volunteers in the Civil War and late Paymaster General.

SNOWDEN, Archibald Loudon, Philadelphia, Sept. 6; diplomat, former Minister to Greece and Spain.

SORSBY, William Brooks, Clinton, Mass., March 28, aged 60; diplomat, minister to Bolivia, 1902-9.

SPANGLER, Henry Wilson, Philadelphia, March 18, aged 54; professor of mechanical engineering, University of Pennsylvania.

STRAUS, Isidor, drowned at sea, April 15, aged 67; merchant and philanthropist, representative in Congress from New York, 1893-5.

SUMNER, Edwin Vose, San Francisco, Aug. 23, aged 77; brigadier-general, U. S. A., retired.

Taft, Royal Chapin, Providence, R. I., June 4, aged 90; former Governor of Rhode Island.

TARR, Ralph Stockman, Ithaca, N. Y., March 21, aged 48; geographer and explorer, professor of physical geography in Cornell University.

TAYLOR, Robert Love, Washington, March 31, aged 61; U. S. senator from Tennessee.

TERRELL, Alexander Watkins, Min-

eral Springs, Texas, Sept. 9, aged 84; U. S. Minister to Turkey, 1893-7.

TERRELL, Joseph Meriwether, Atlanta, Ga., Nov. 17, aged 51; governor of Georgia, 1902-8; U. S. senator from Georgia, 1910-11.

TRYON, James Rufus, Brooklyn, March 19, aged 74; late Surgeon-General of the U. S. Navy.

UTTER, George Herbert, Westerly, R. I., Nov. 3, aged 58; governor of Rhode Island, 1905-6, representative in Congress since 1911.

WARREN, Henry White, Denver, Col., July 23, aged 81; bishop of the Methodist Episcopal Church.

WEAVER, James Baird, Des Moines, Iowa, Feb. 6, aged 79; representative in Congress from Iowa, 1879-81 and 1885-9; twice Populist candidate for the Presidency of the United States.

WELLS, Almond Brown, Geneva, N. Y., Sept. 7, aged 70; brigadier-general, U. S. A., retired.

WICKLIFFE, Robert C., Washington, June 11, aged 38; representative in Congress from Louisiana.

WRIGHT, Sophie B., New Orleans, La., June 10, aged 46; educator and philanthropist.

WRIGHT, Wilbur, Dayton, Ohio, May 30, aged 45, aviator and aeroplane builder.

YOUNG, Lucien, New York, Oct. 2, aged 60; rear-admiral, U. S. N.

FOREIGN NECROLOGY

VON AEHRENTHAL, Count Aloys, Vienna, Feb. 17, aged 58; Premier and Minister of Foreign Affairs of Austria-Hungary.

ALMA-TADEMA, Sir Lawrence, Wiesbaden, Germany, June 24, aged 76; painter of classical subjects.

AUBRY, Augusto, Taranto, Italy, March 4, aged 76; vice-admiral in the Italian Navy, in command of the Italian attacking fleet against Turkey.

BARR, Robert, London, England, Oct. 20, aged 62; novelist.

BERNAT, Julie (Mme. Judith), Paris, Oct. 27, aged 85; actress.

VON BIBERSTEIN, Baron Odolf Marschall, Baden-Weller, Germany, Sept. 24, aged 70; German Ambassador to Great Britain.

BIENNAERT, Auguste Marie François, Lucerne, Switzerland, Oct. 6, aged 83; Belgian statesman and peace advocate.

BLACKWOOD, William, London, England, Nov. 11, aged 76; editor of *Blackwood's Magazine*.

BLAKE, Edward, Toronto, Canada, March 1, aged 79; Canadian statesman.

BOOTH, William, Hadleywood, England, Aug. 20, aged 83; founder and head of the Salvation Army.

BRISSON, Eugene Henri, Paris,

France, April 14, aged 76; President of the French Chamber of Deputies.

BROWNING, Robert Wiedemann Barrett, Asolo, Italy, July 8, aged 63; painter, only son of Robert and Elizabeth Barrett Browning.

CANALEJAS y MENDES, Jose, Madrid, Spain, Nov. 12, Premier of Spain.

CARTWRIGHT, Sir Richard, Kingston, Ont., Sept. 24, aged 77; former Canadian Minister of Trade and Commerce.

CLOUSTON, Sir Edward Seaborne, Bart., Montreal, Nov. 23, aged 63; vice-president and general manager of the Bank of Montreal.

COLERIDGE-TAYLOR, Samuel, London, Sept. 1, aged 37; composer.

CORRAL, Ramon, Paris, France, Nov. 10, aged 58; Vice-President of Mexico, 1904-11.

CUMBERLAND, George William, Prince of Friesack, Germany, May 20, aged 32; eldest son of the Duke of Cumberland, legal heir to the thrones of Hanover and Brunswick.

DAHN, Felix S., Breslau, Germany, Jan. 3, aged 77; historian, novelist and poet.

DARWIN, Sir George Howard, London, England, Dec. 7, aged 67; professor of astronomy in Cambridge University.

DELAUNAY-BELLEVILLE, Louis, Paris, Feb. 10, aged 69; noted French engineer.

DETAILLE, Jean Baptiste Edouard, Paris, France, Dec. 24, aged 64; military painter.

FAIRBAIRN, Andrew Martin, Oxford, England, Feb. 9, aged 74; principal emeritus, Mansfield College, Oxford.

FIFE, Alexander William George Duff, Duke of, Assuan, Egypt, Jan. 29, aged 62.

FREDERICK VIII, Hamburg, Germany, May 14, aged 68; King of Denmark.

FURNESS, Christopher, Baron Grantley, London, Nov. 10, aged 60; ship-builder and owner.

HAYS, Charles Melville, drowned at sea, April 15, aged 55; president of the Grand Trunk Railway.

HERTEL, Albert, Feb. 20, aged 68; German landscape painter.

HOLMES, Rt. Rev. George, Feb. 3, aged 53; Bishop of Athabasca, Canada.

HONDA, Yoichi, March 26, aged 63; bishop of the Methodist Church of Japan.

ISHIMOTO, Shiaroku, Tokio, Japan, April 2, aged 57; Minister of War in the Japanese cabinet.

JOHN, Griffith, London, England, July 25, aged 80; pioneer missionary in central China.

KITCHENER, Sir Frederick Walter, Hamilton, Bermuda, March 7, aged 53; Governor of Bermuda.

LABOUCHERE, Henry, Florence, Italy, Jan. 16, aged 80; journalist and parliamentarian, editor of London *Truth*.

LANG, Andrew, Banchory, Scotland, July 20, aged 68; author.

LECONTE, Cincinnatus, Port-au-Prince, Haiti, Aug. 8; President of Haiti.

LEFEBVRE, Jules Joseph, Feb. 24, aged 78; French painter.

LEMOINE, Sir James MacPherson, Quebec, Feb. 5, aged 86; Canadian historian and naturalist.

LEROY-BEAULIEU, Henri Jean Baptiste Anatole, Paris, France, June 16, aged 70; director of the Institute of France, author, publicist, and peace advocate.

LISTER, Joseph, Baron, London, Feb. 11, aged 84; discoverer of antiseptic methods in surgery.

LISTER, Sir Reginald, Tangier, Morocco, Nov. 10, aged 47; British Minister to Morocco since 1908.

LOYSON, Abbé Charles (Père Hyacinthe), Feb. 9, aged 85; French preacher.

LUITFOLD, Prince Regent of Bavaria, Munich, Dec. 12, aged 91.

LUXEMBURG, William Alexander, Grand Duke of, Luxemburg, Germany, Feb. 25, aged 59.

MCCARTHY, Justin, Folkstone, England, April 24, aged 81; novelist and historian.

MARTINO, Commendatore Eduardo de, London, May 22, aged 70; marine painter.

MASSENET, Jules Emile Frédéric, Paris, France, Aug. 13, aged 70; composer.

MONOD, Gabriel Jacques Jean, Versailles, France, April 10, aged 68; French historian.

MOSS, Sir Charles, Toronto, Can., Oct. 11, aged 72; chief justice of the Court of Appeals of Ontario and chancellor of the University of Toronto.

MUTSUHITO, Tokio, Japan, July 30, aged 59; Emperor of Japan.

NOGI, Count Maresuke, Tokio, Japan, Sept. 13, aged 63; Supreme Military councillor of the Japanese Empire.

OSTEN-SACKEN, Count Nicolai Dmitrijevitch von der, Monte Carlo, May 22, aged 81; Russian Ambassador to the German Empire.

PASCOLI, Giovanni, Bologna, Italy, April 6, aged 57; Italian poet, professor of Italian Literature in the University of Bologna.

PASSY, Frederic, Paris, France, June 12, aged 90; French economist, author, and peace advocate.

POINCAIRE, Jules Henri, Paris, France, July 17, aged 58; mathematician.

RICHARDS, Sir Frederick William, London, England, Sept. 28, aged 78; Admiral of the British Fleet.

RIO BRANCO, Baron do, Rio Janeiro, Feb. 10; Brazilian Minister of Foreign Affairs.

RIVIERE, Louis Auguste Theodore, Paris, France, Nov. 9, aged 51; sculptor.

ROMANA, Alejandro Lopez de, Lima, Peru, May 27; President of Peru, 1899-1903.

SALMON, Sir Nowell, Feb. 14, aged 77; Admiral of the British Fleet.

SKEAT, Walter William, London, Oct. 7, aged 77; philologist, professor of Anglo-Saxon in Cambridge University.

STEAD, William Thomas, drowned at sea, April 15, aged 62; journalist and author.

STRINDBERG, Auguste, Stockholm, Sweden, May 14, aged 63; Swedish novelist and dramatist.

SUVORIN, Alexis, St. Petersburg, Russia, Aug. 24, aged 78; novelist, dramatist, and journalist.

TINEL, Edgar, Brussels, Oct. 28, aged 58; composer, director of the Royal Conservatory at Brussels.

VON KIDERLEN-WAECHTER, Arthur, Stuttgart, Germany, Dec. 30, aged 60; German Secretary of Foreign Affairs.

WHITE, Sir George Stuart, London, June 24, aged 76; Field Marshal in the British Army.

WIENIAWSKI, Joseph, Nov. 16, aged 74; Polish pianist.

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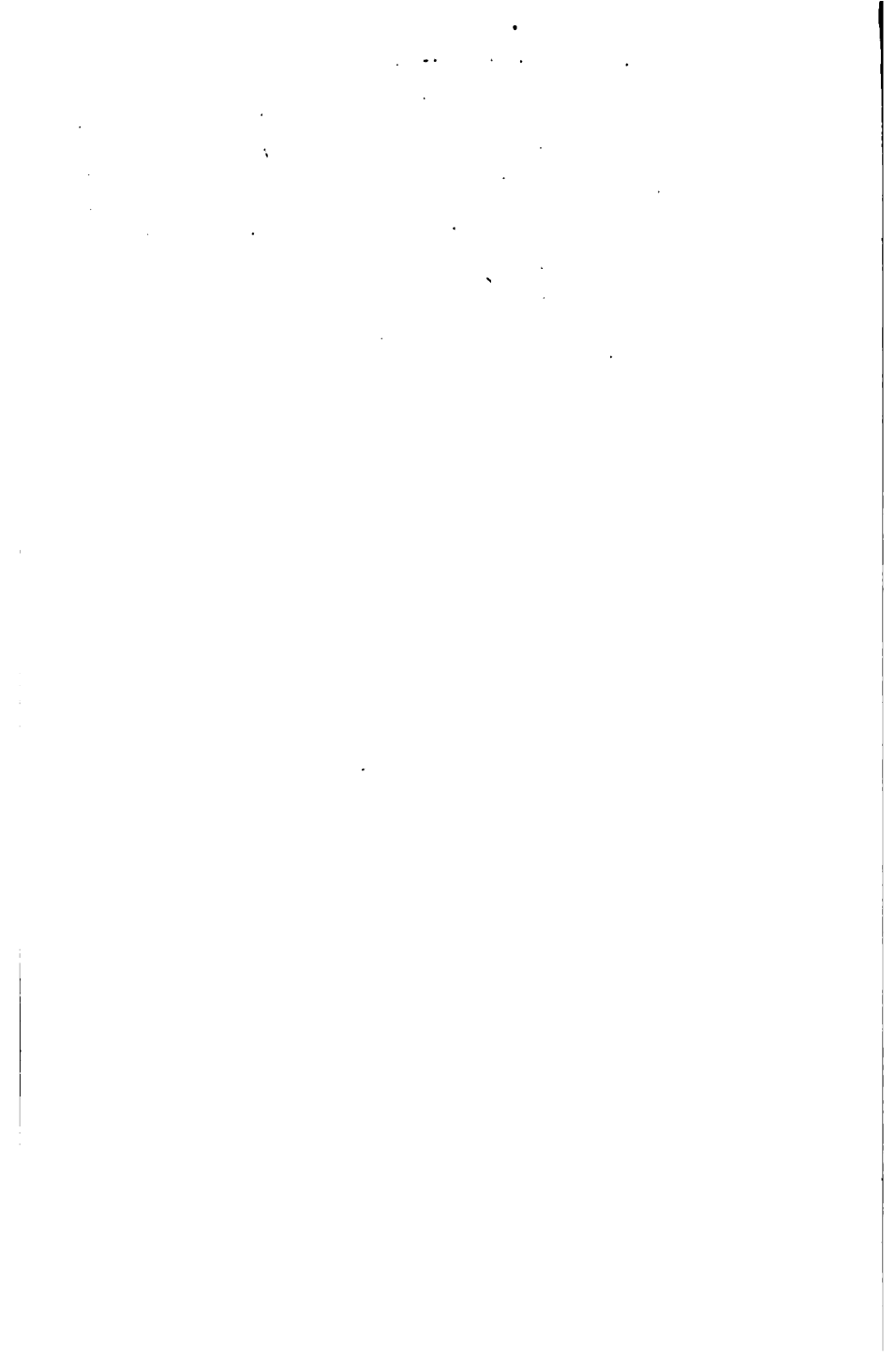
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